# IRON & COAL
TRADES REVIEW

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LONDON: FRIDAY, JANUARY 1, 1960

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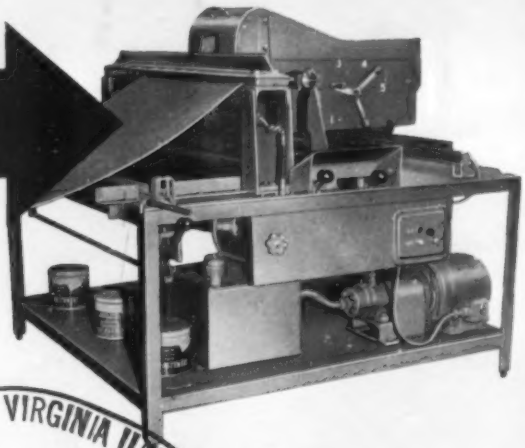

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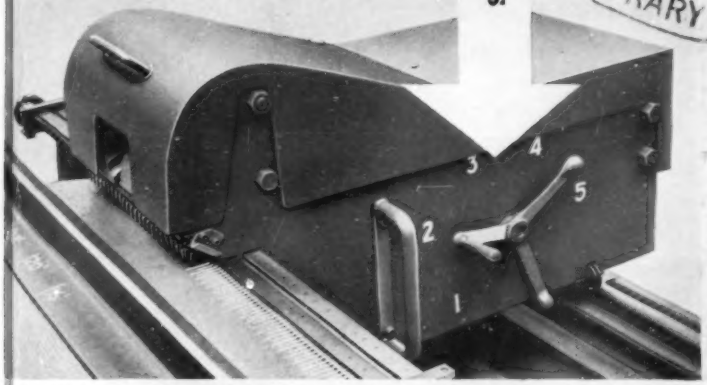


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**Decking and Mine Car Control Equipment**

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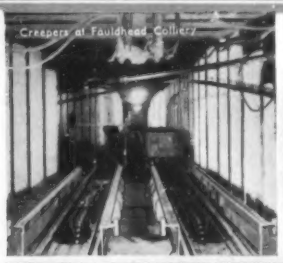
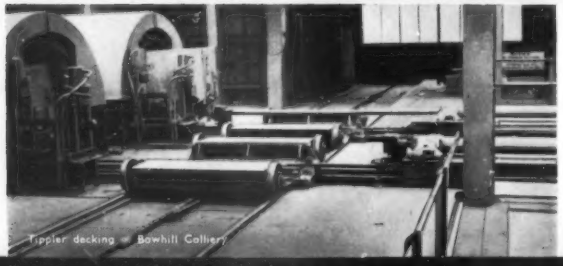

Creepers at Fauldhead Colliery

Automatic rail switch operating units at Pleasley Colliery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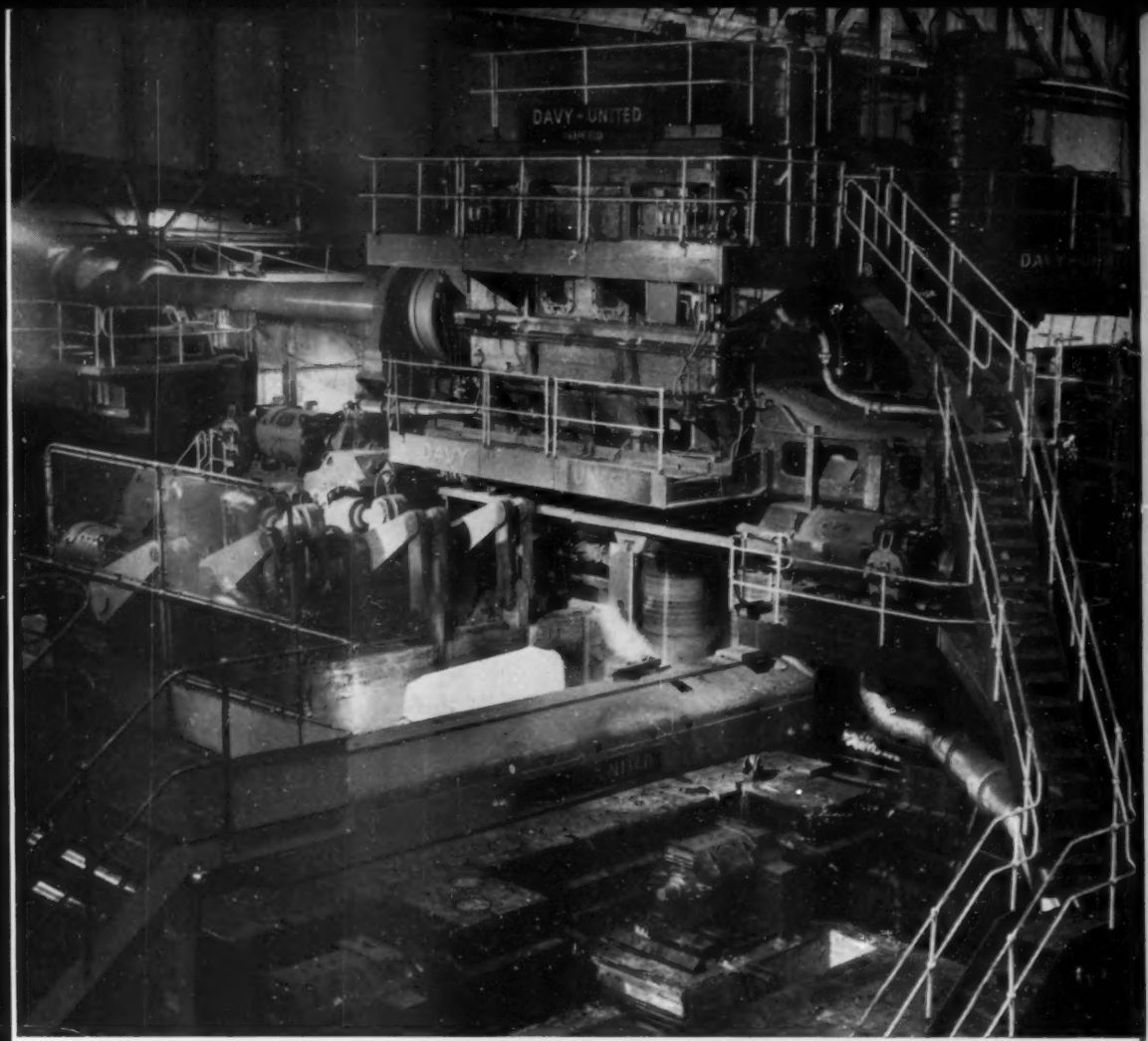


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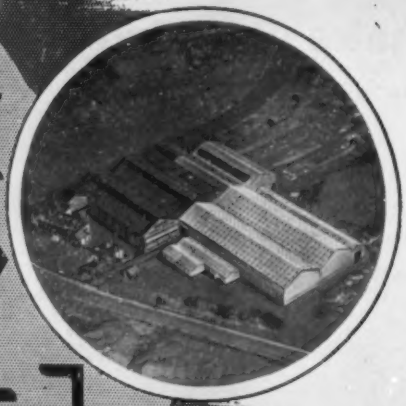

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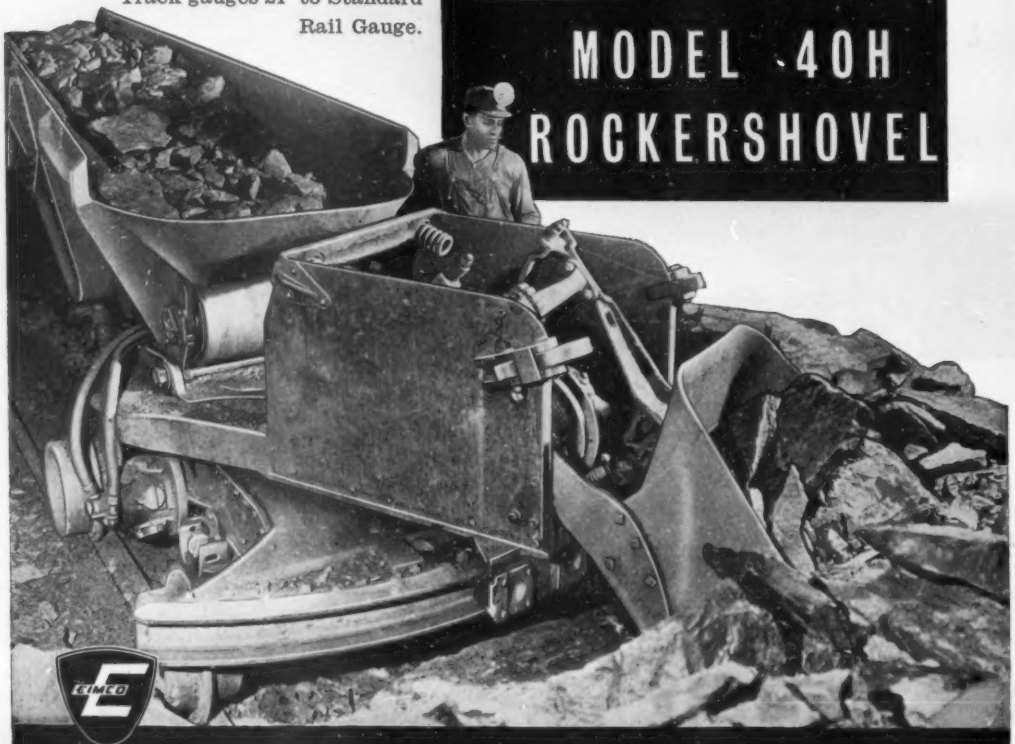

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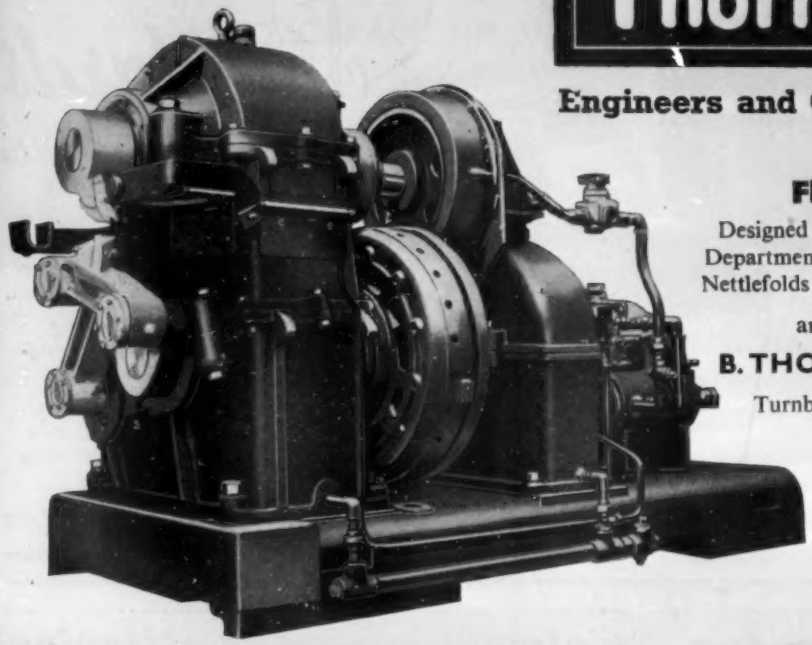

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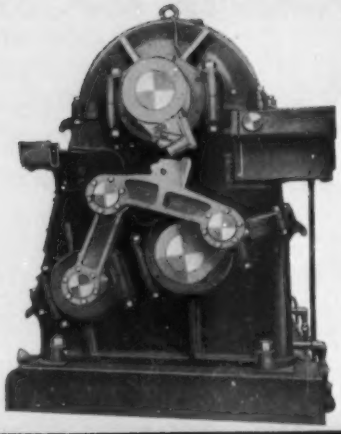

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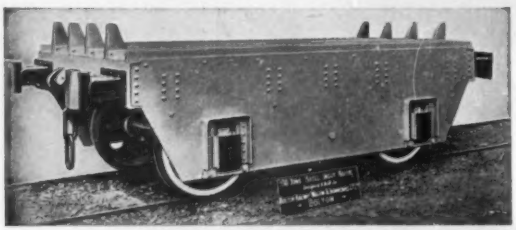

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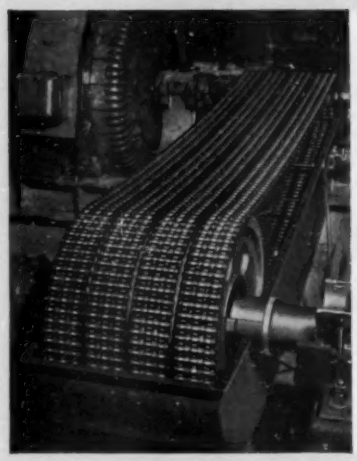

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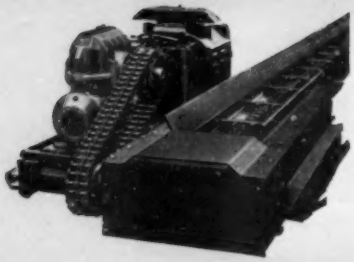

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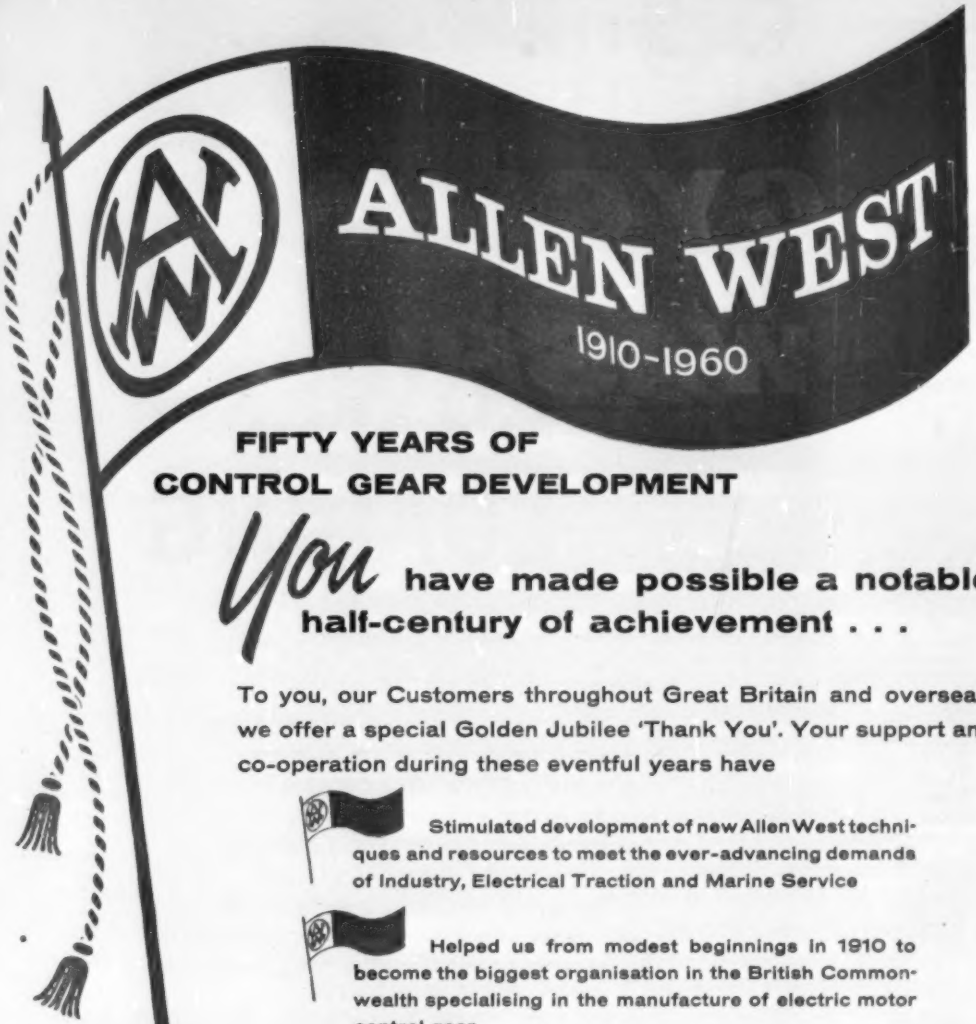


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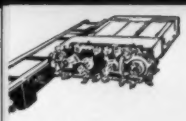

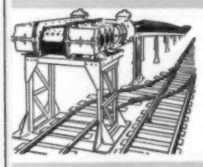
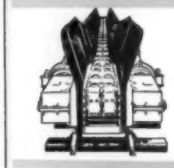
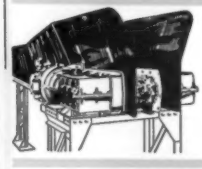
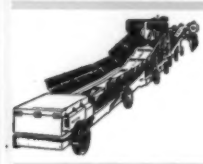
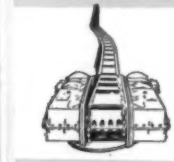

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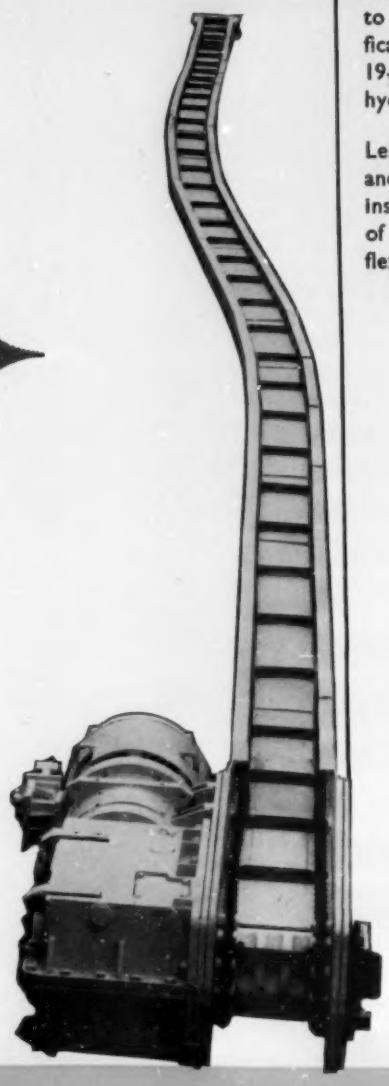

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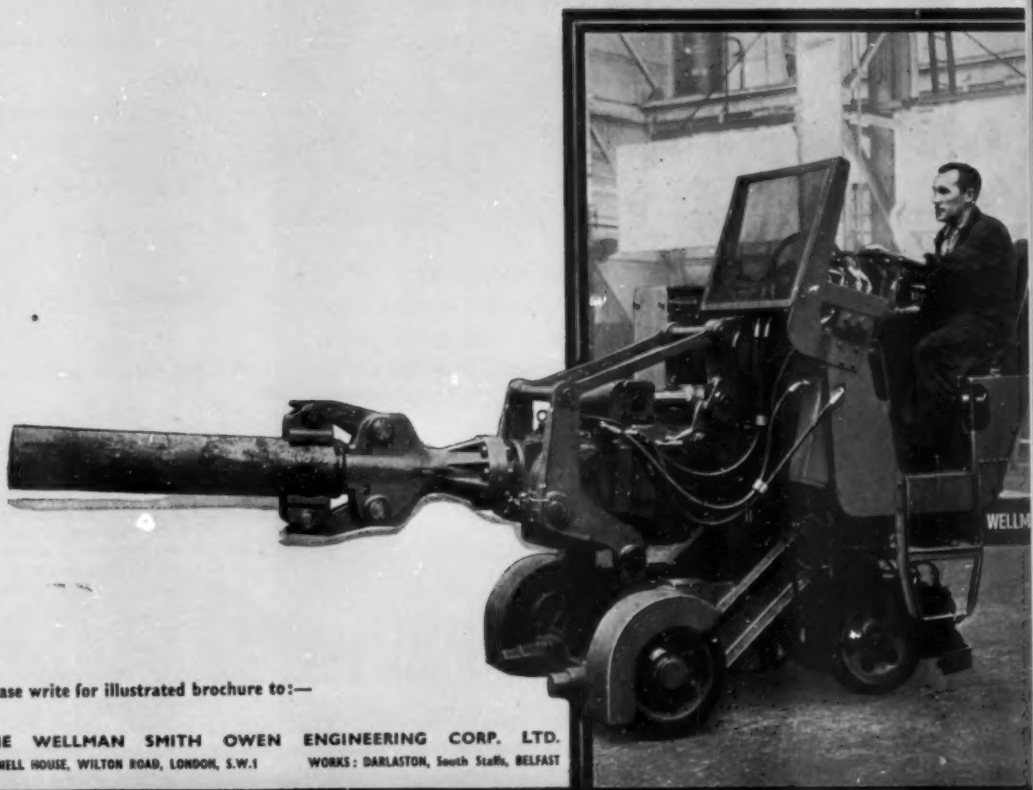

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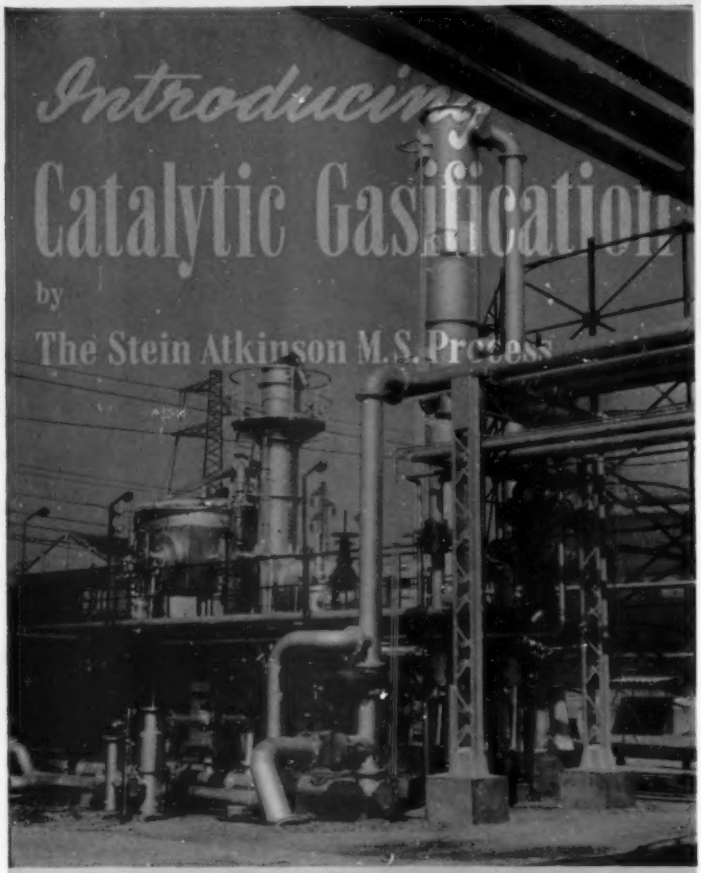


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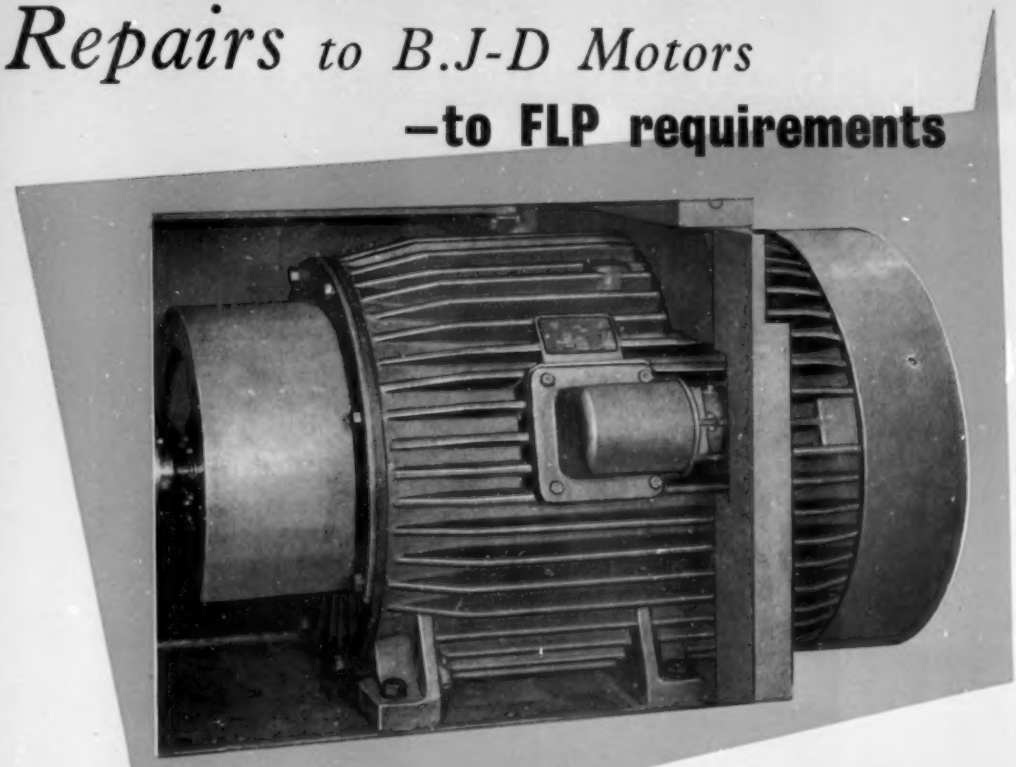

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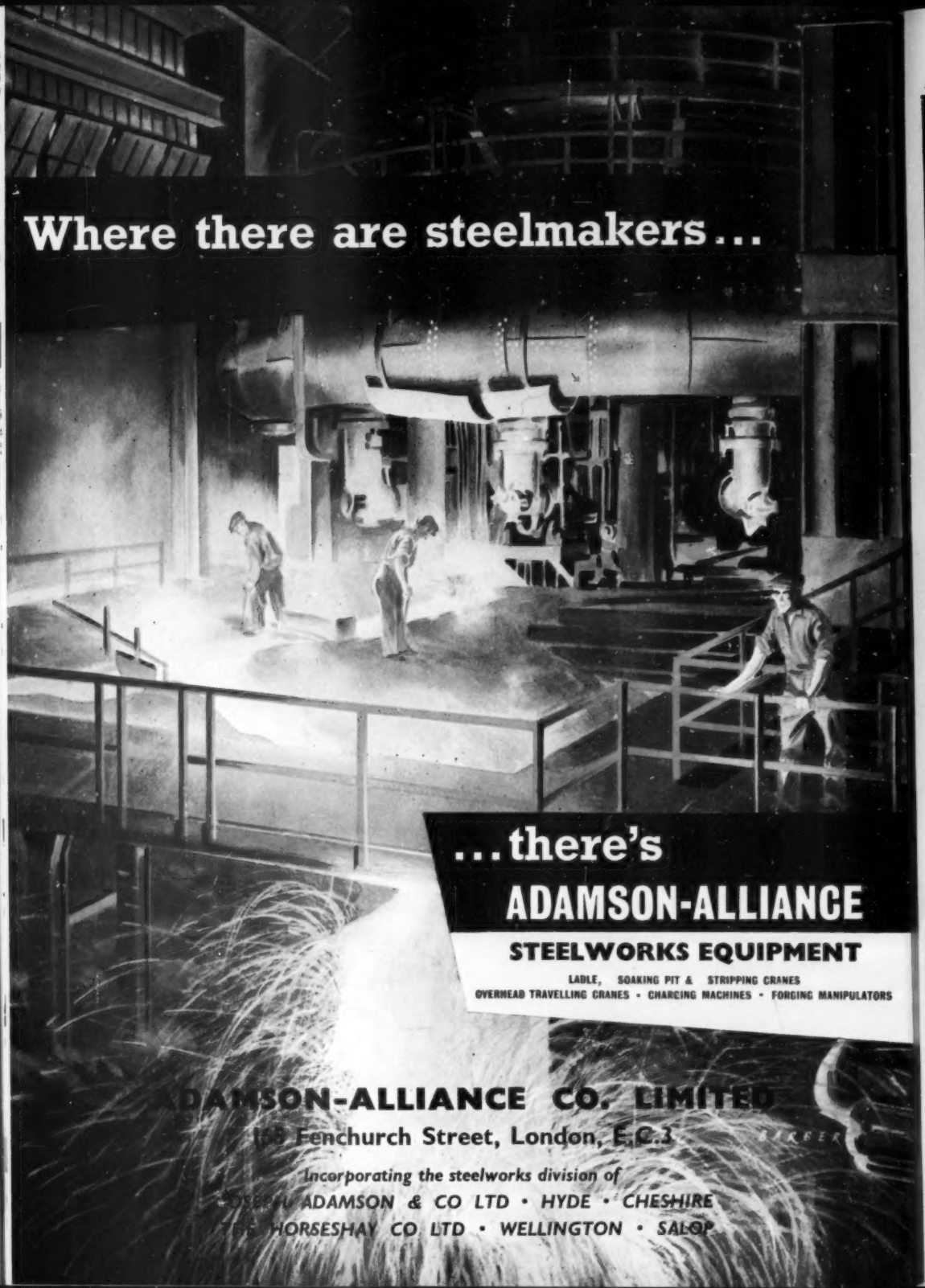
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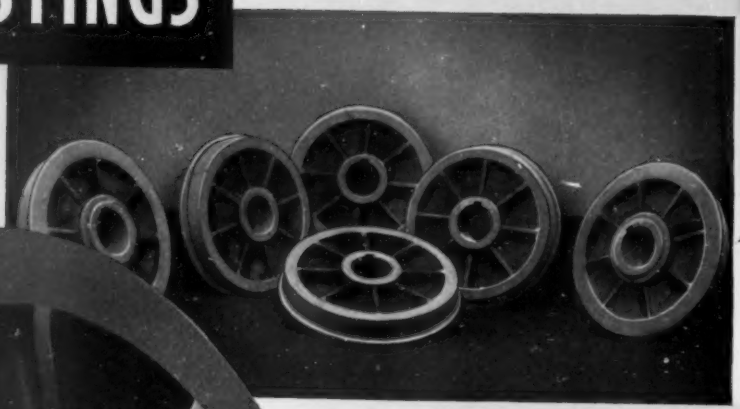

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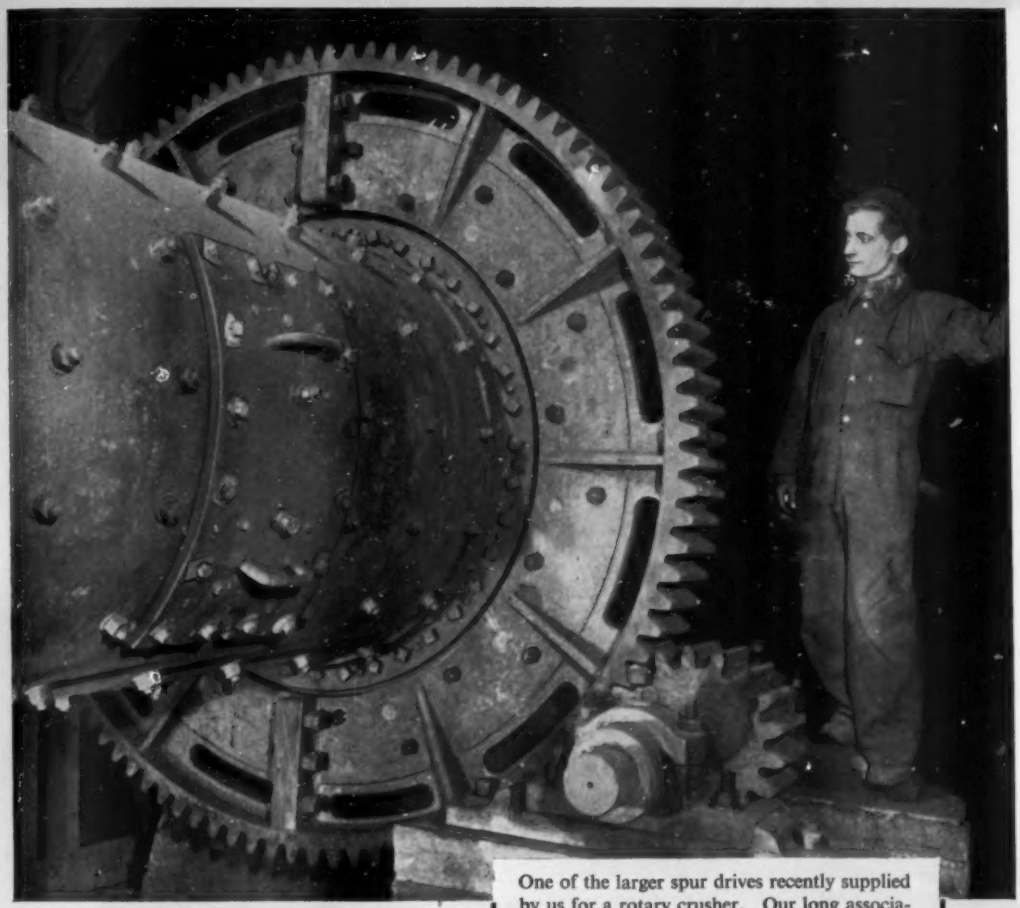

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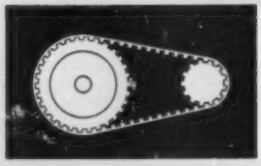

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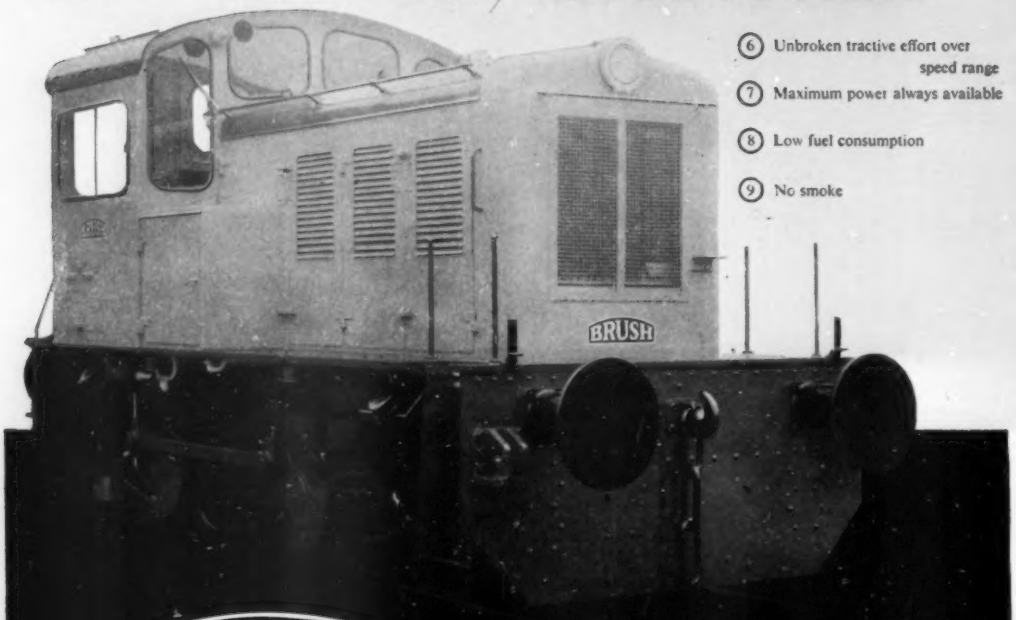


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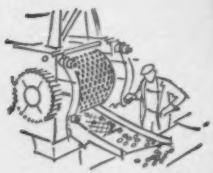

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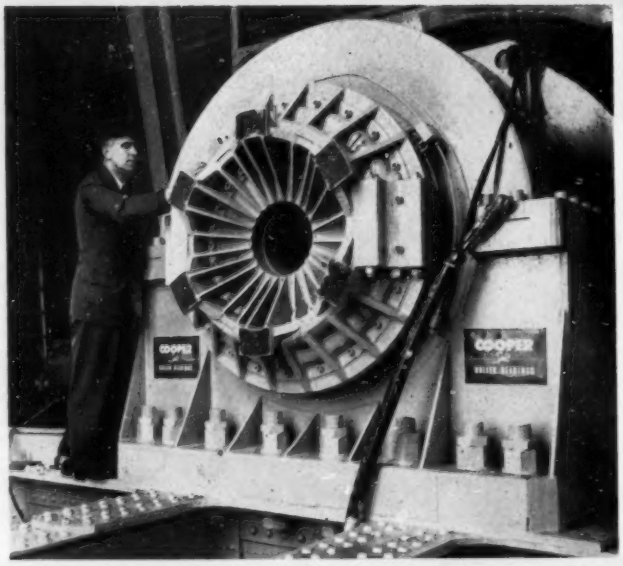


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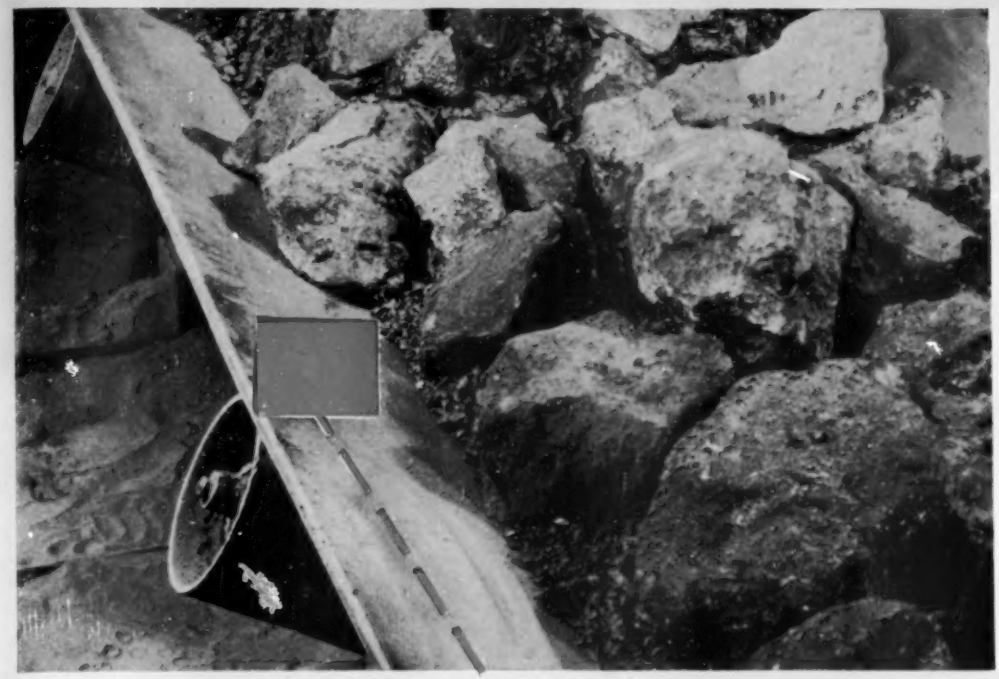

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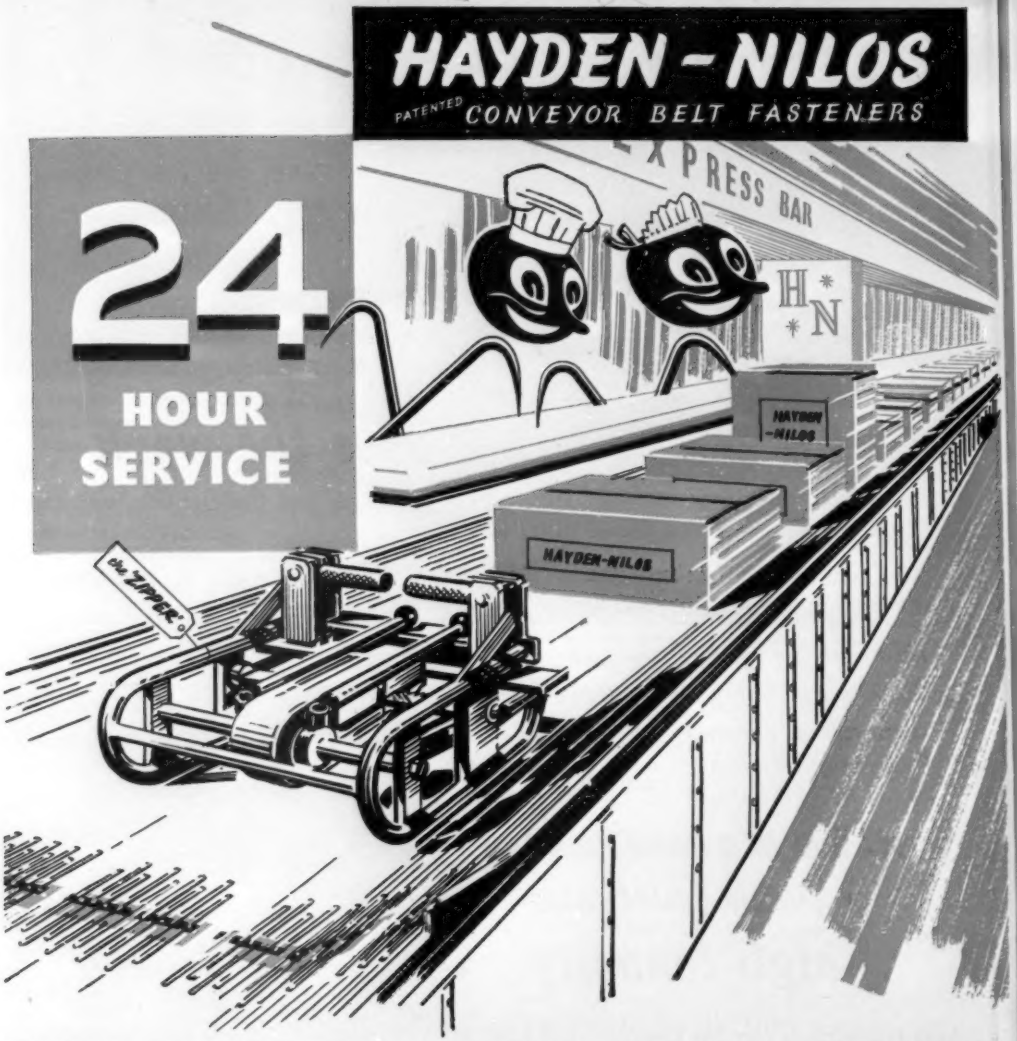


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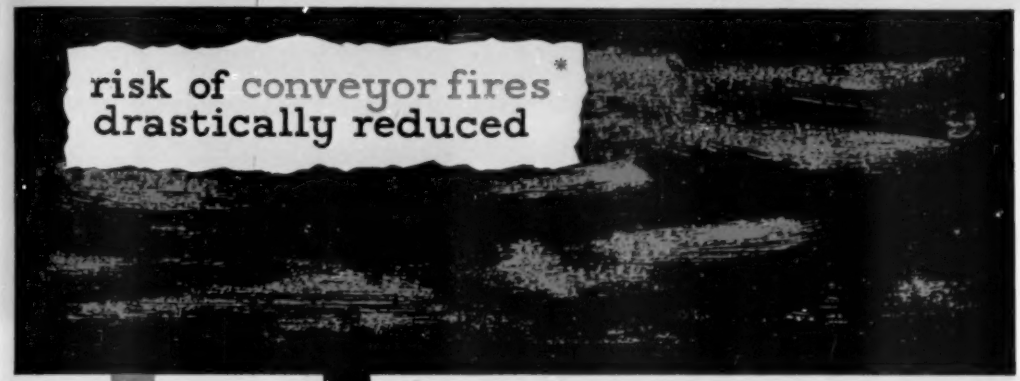


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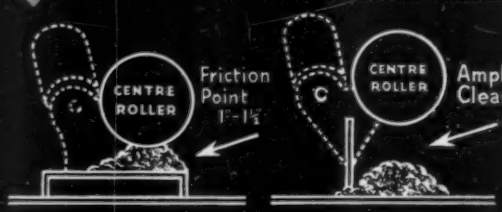


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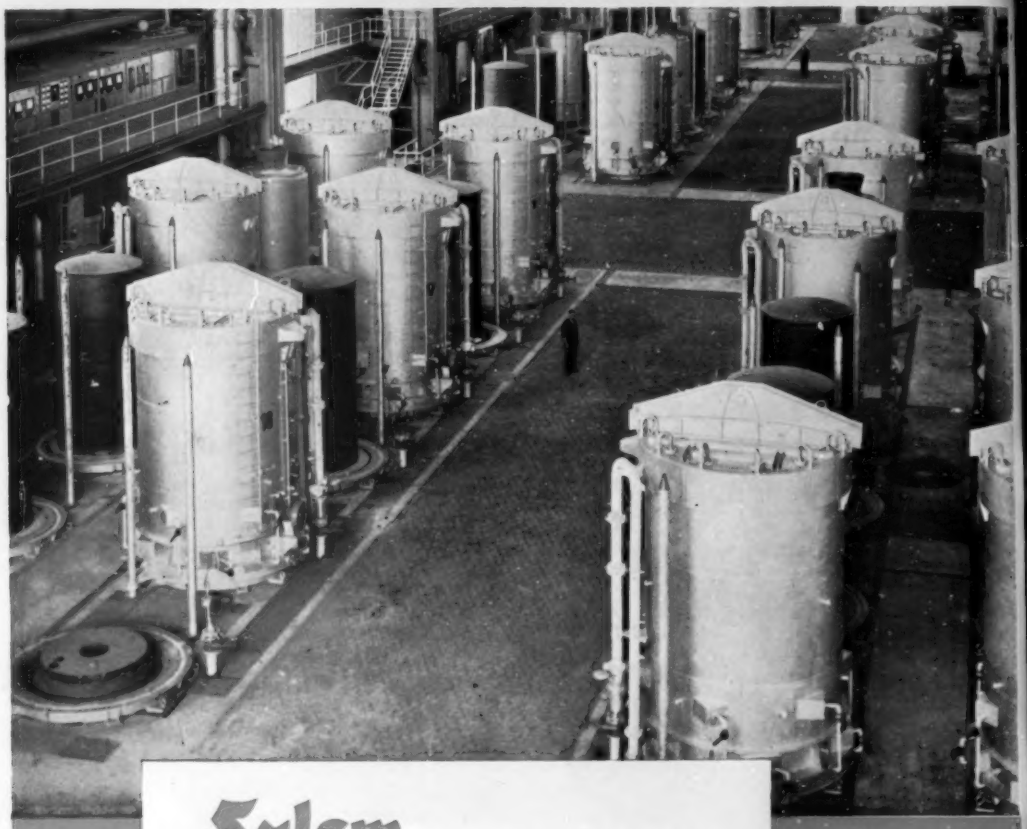

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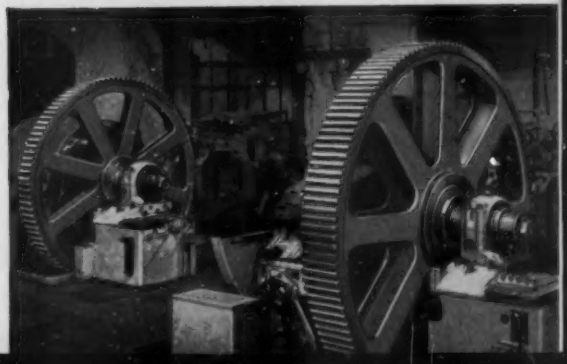

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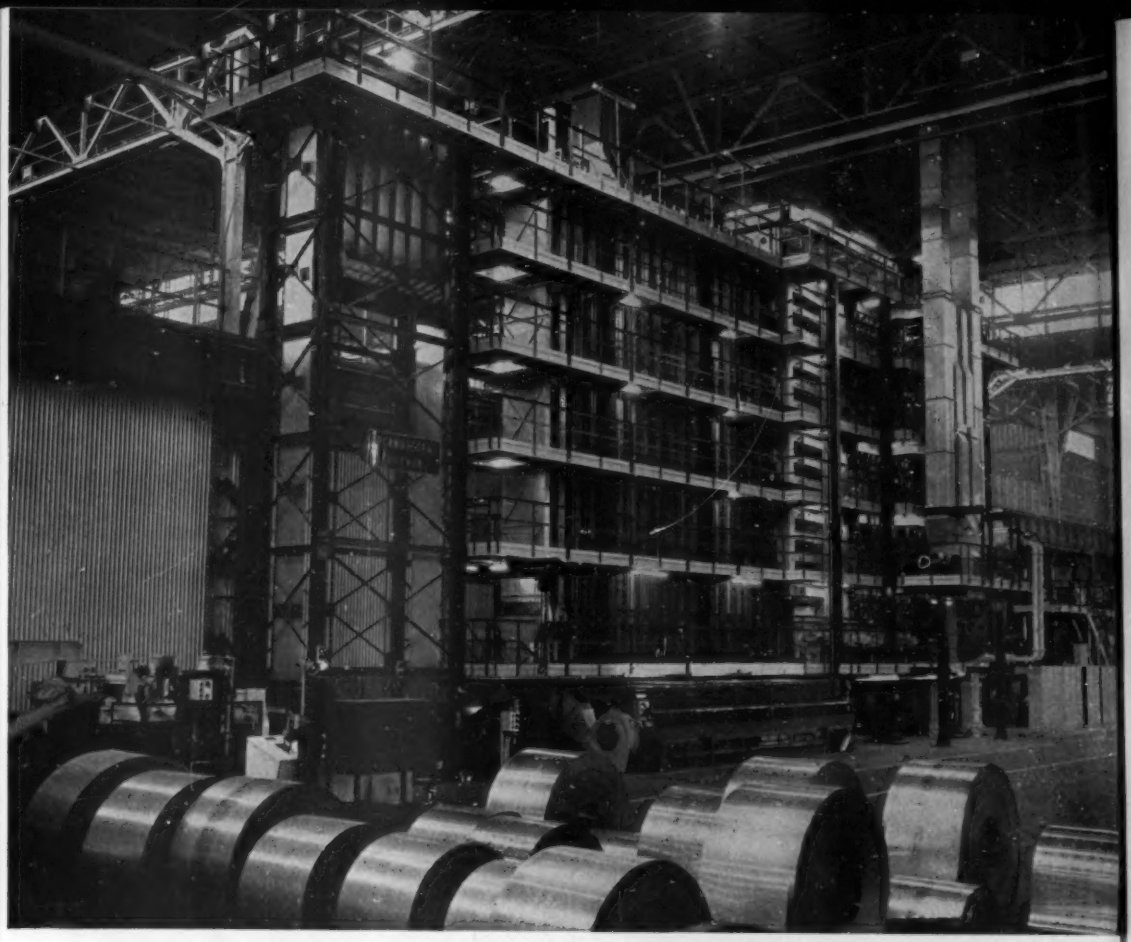

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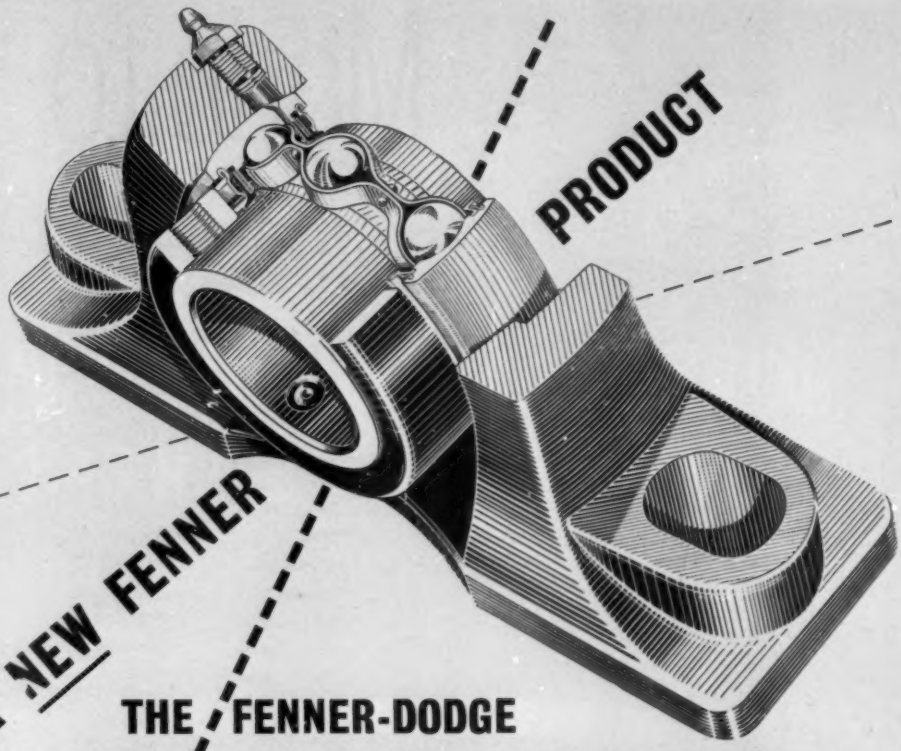

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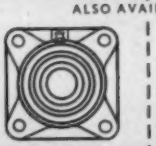

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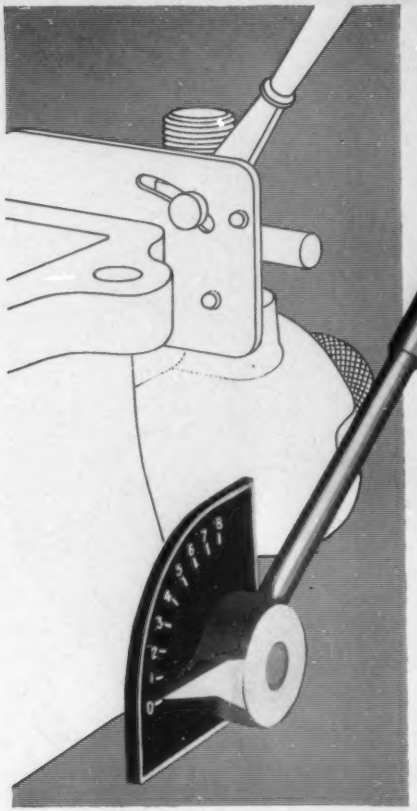

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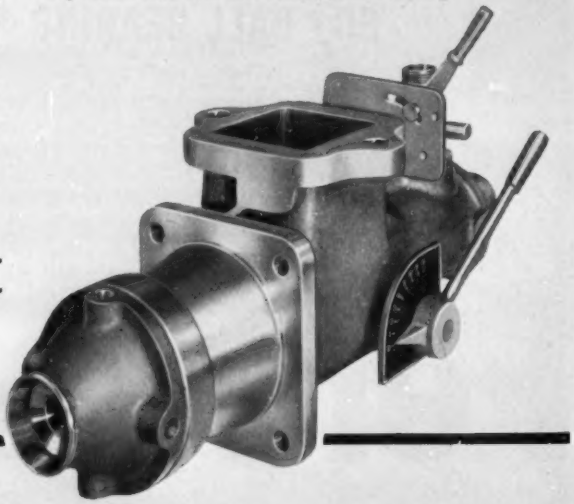

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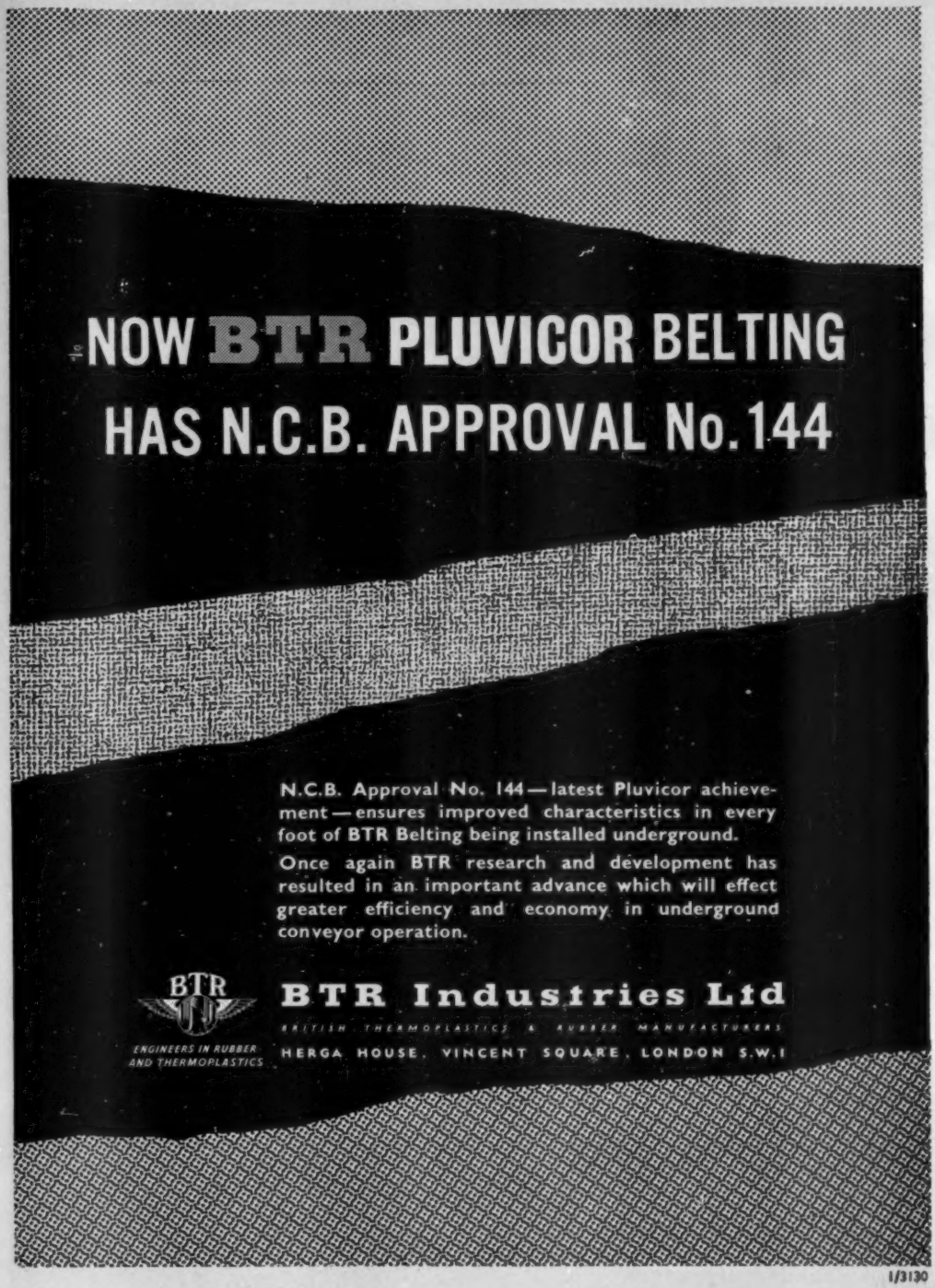
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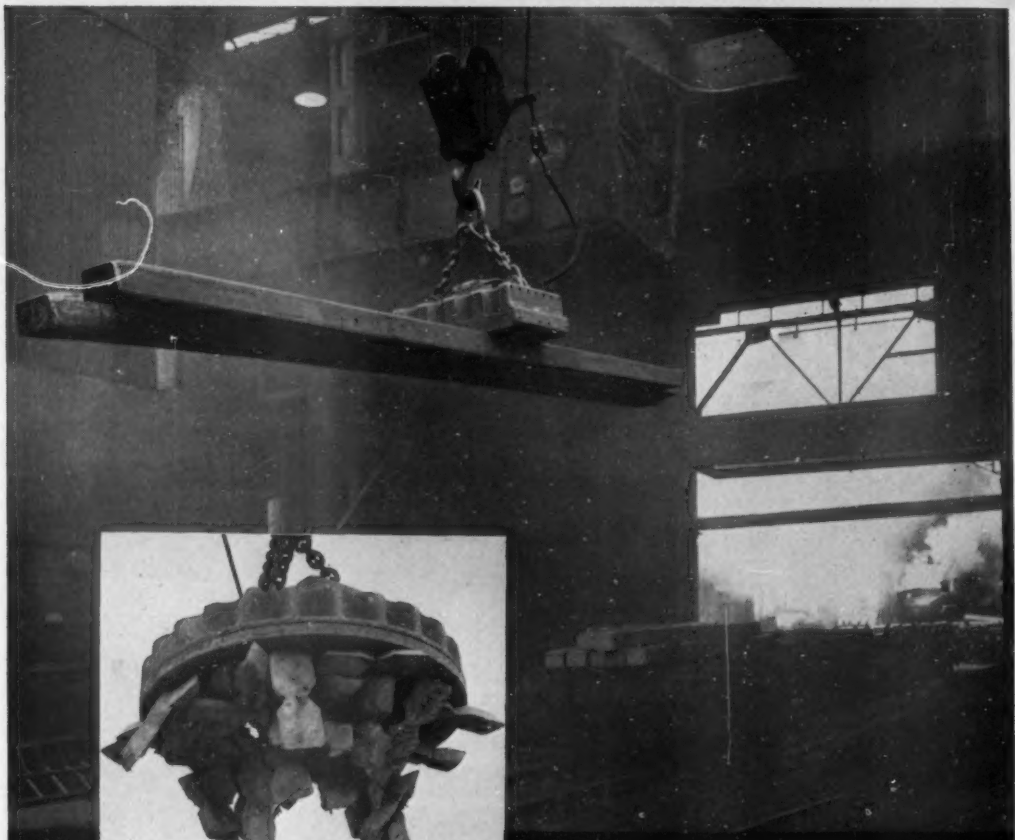

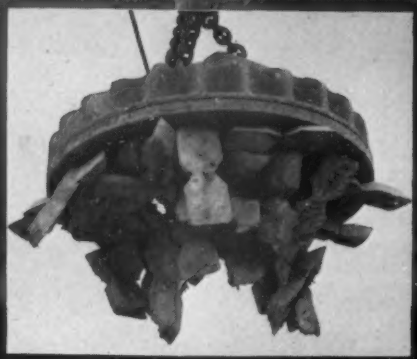

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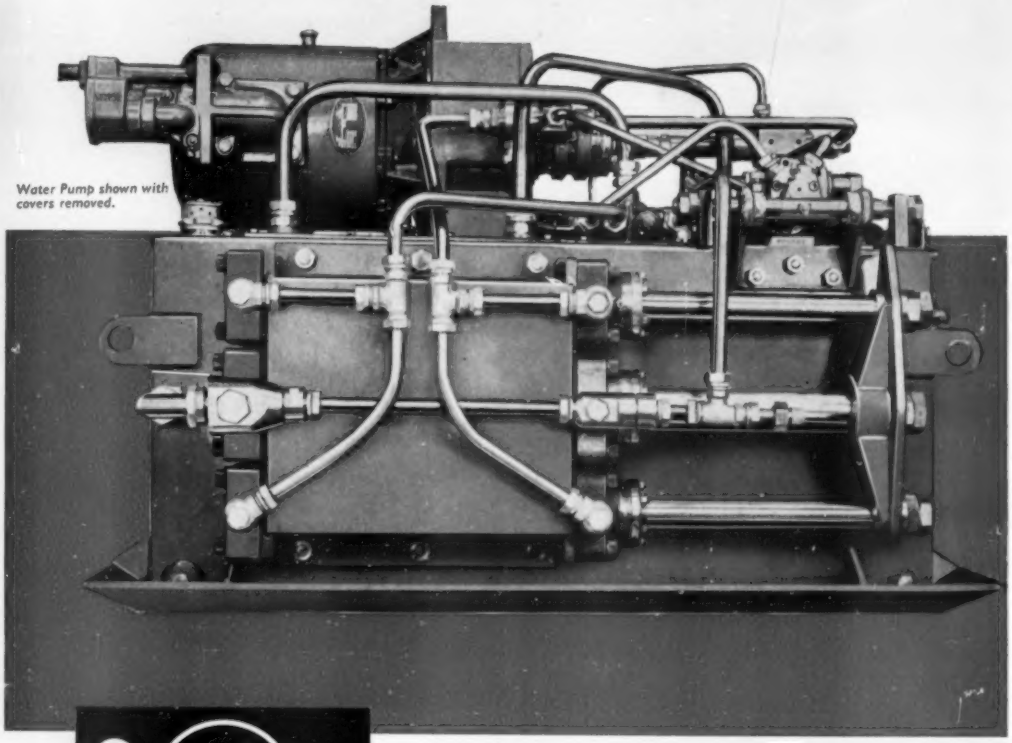

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- Economical in explosives usage

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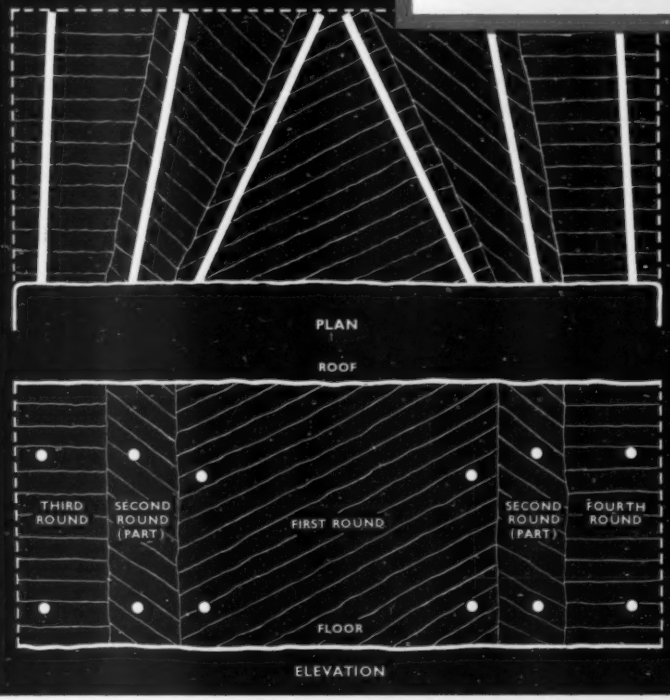


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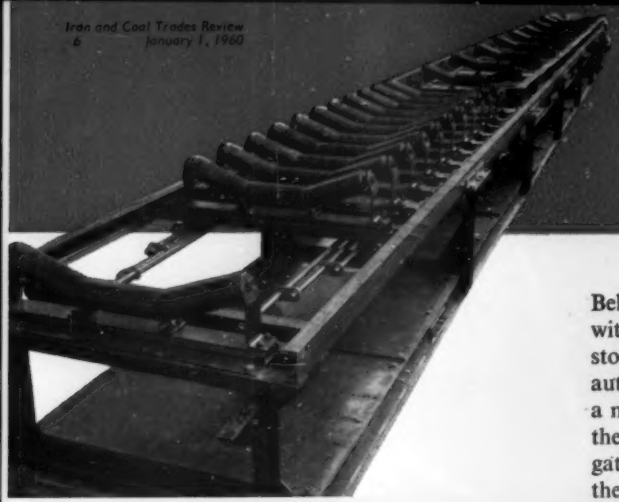

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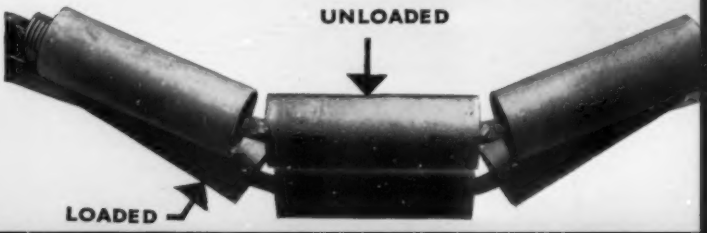

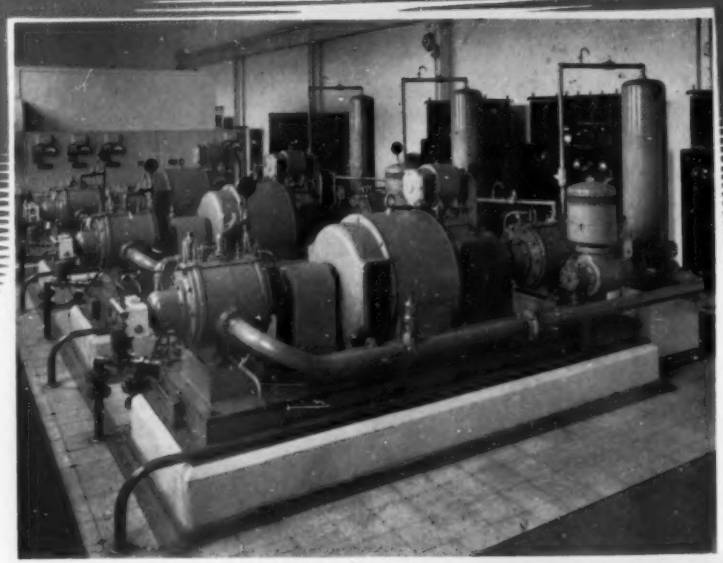

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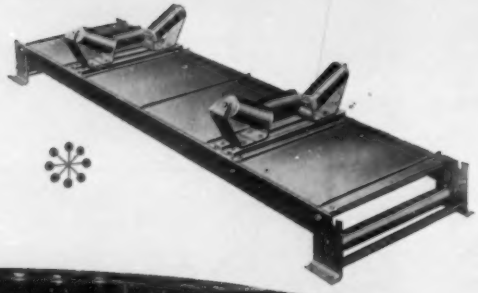

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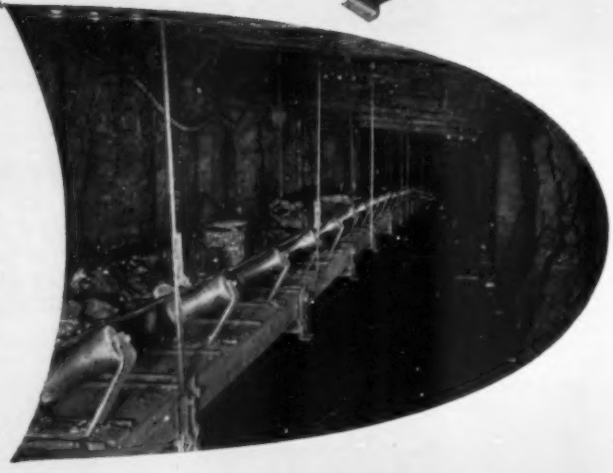

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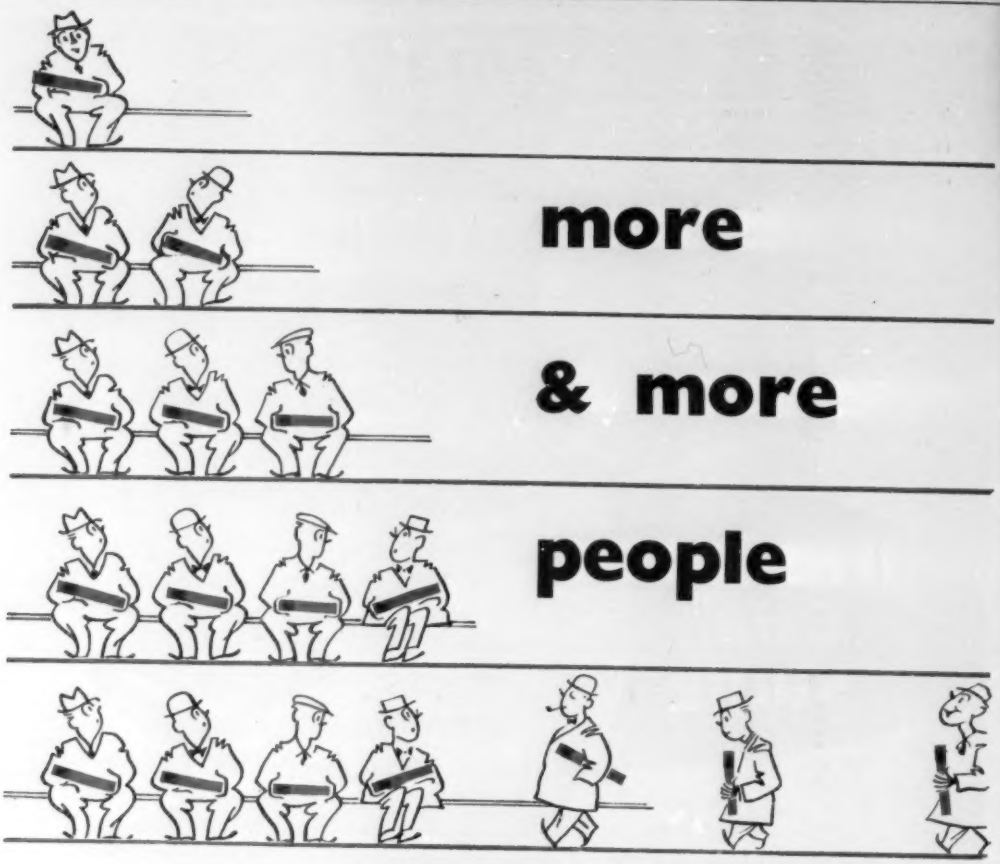


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JANUARY 1, 1960

Vol. 180

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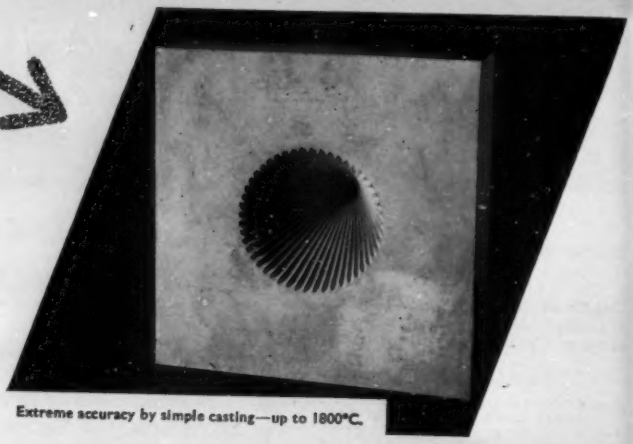

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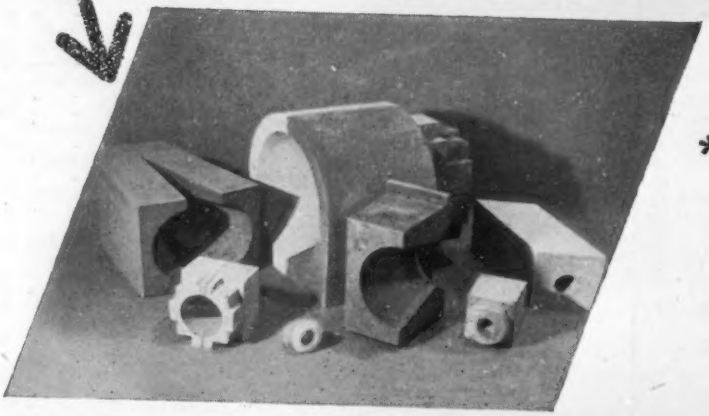

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IRON AND COAL
TRADES REVIEW

Vol. 180 January 1, 1960 No. 4,772

# The Year Ahead

IT is in the very nature of things that prosperity is not permanent, but punctuated by booms and recessions if only to draw man's attention to the fallibility of his works. Life is, in fact, a constant adjustment to change.

Some have not been slow to appreciate the measure of price stability that has been achieved during the last year or two, but others are concerned about its continuance. The immediate reaction to the Chancellor's appeal for lower prices is a feeling that either inflationary pressures are beginning to exert themselves or that competitive forces abroad are beginning to take a serious toll on the effectiveness of our export trade. In a "you-have-never-had-it-so-good" economy many are bound to concede that it has in part been secured by a modicum of inflation, by a favourable trend in the terms of trade, and by the response of the economy to the Chancellor's proposals earlier in the year, coupled with the general improvement in international trade.

Wage levels are, however, an unknown factor for 1960, and perhaps interest rates as well. British industry has also to make a psychological adjustment to the European Economic Community, the European Free Trade Area, and the recent steps toward liberalization of trade. The year 1960 promises to be an interesting one in which expansionist forces may be expected to gather strength and momentum. It would not, however, be unreasonable to expect that the Government may attempt to check a rate of expansion to prevent its running out of hand.

For steel, 1960 is likely to be a good year. The industry is now operating at 95 per cent. of capacity, equivalent to about 25,000,000 tons per annum. In the past year some difficulty has been experienced in matching supply with demand. For example, in sheet there has been a tight market. The motor-car industry, being the largest buyer, has secured priority treatment, leaving it to the smaller purchasers to cover shortages by obtaining supplies at considerable additional expense and after certain disadvantages in quality. The position is likely to improve as new plant comes into operation.

The supply position in steel strip and bar has been equally as unsatisfactory and buyers have been forced to cover their requirements from several sources in the hope of deriving requisite supplies from at least one of the sources available. In one particular instance which may illustrate the position customers were advised by their suppliers that a minimum of nine months might be required from the receipt of orders before initial deliveries could be made. It is hoped that the industry will be able to do something in the coming year to rectify the position.

Exact equation of supply and demand is seldom practicable and significant expansion in one sector is apt to upset the most careful analysis of suppliers in another. The steel industry has to attempt to accommodate the fluctuations of the market, and not unreasonably both under and over supply are to be avoided.

Scotland hopes to develop a motor industry and immediate hope has been aroused by the announcement of a new strip mill at Ravenscraig, near Motherwell. Quite apart from the propriety of locating plant at any one spot, Scottish claims must be assessed against the economic requirements of the motor industry. These may prove incompatible, but doubtless 1960 will see the contending claims resolved.

The plight of the coal industry is not difficult to appreciate, and although it was foreseen it does not make the contemporary position any less disagreeable to those immediately concerned. Nevertheless, after a period of adjustment which may prove both difficult and painful, the industry should emerge better equipped to make its valuable contribution to the national economy. The dissatisfaction of the gas industry, dependent on a single raw material source and hence a certain inflexibility of price, may be partially dispelled by the increased use of refinery gases and imported methane. Further, the problem of an accumulation of unsold stocks of coke may be partly solved by the adoption of the Lurgi process and the total gasification of relatively low grade coals. On the other hand, the production of electricity by nuclear fission for the electricity authorities is unlikely to offer any serious challenge to coal until the late 1960s or early 1970s, when nuclear power is expected to become competitive with conventional fuels.

In the field of general industry the situation has been realistically assessed by Sir James Bowman, chairman of the National Coal Board, who suggested that "we have been given the blunt alternative of reducing our prices by 10s. a ton or losing our trade to oil." With overall ex-pit cost of mined coal at, say, 83s. 11d. a ton, it would seem somewhat uneconomic cost-wise to curtail opencast mining, which figures at 62s. 2d. and yields, moreover, a substantial profit to the board. And a higher price for oil through the levy of a tax on fuel oil would scarcely be expected to assist industry

generally, which must be competitive if it is to prove effective in the export market. The NCB is faced with a situation that is prevalent in France, western Germany, Belgium, and the USSR, and fighting a rearguard action is somewhat distasteful even though the board has the consolation of retaining the greatest part of the market. The political, social, and economic consequences wrought by a change in the fuel pattern of the United Kingdom should nevertheless be faced immediately and adjustments made to prevent the industry falling seriously into economic disadvantage.

There is no escaping the fact that the prosperity of the coal industry lies in the future rather than the present, for a reason that is not immediately apparent, namely, for use of the indigenous reserves not only as a fuel, but as a prolific source of chemicals also. Though coal exists in abundance it is relatively wasteful as a fuel compared with the profusion of chemicals it yields. Set in the ground, the coal itself could well afford to await the events, but the industry and national needs cannot wait and its real value must necessarily be "plundered" to suit the requirements of the moment.

## "Iron and Coal": Changes in Representation

DETAILS of new arangements in the representation of IRON AND COAL in the northern and Midland counties are outlined below. The changes are effective from today (Friday).

NORTHUMBERLAND AND DURHAM—Mr. Eric Perrin, who has been north-eastern area manager for over 15 years, is relinquishing, at his own request, the major part of his responsibilities, and will in future represent the journal in Northumberland and Durham only. His address is:—55, Davison Avenue, Monkseaton, Northumberland (telephone: Whitley Bay 28018).

CUMBERLAND, WESTMORLAND, LANCASHIRE, CHESHIRE, AND YORKSHIRE (EXCLUDING SHEFFIELD)—Mr. Alec Currie has joined us to take over this new northern area. He brings many years' experience in the representation of specialist journals of the highest class. His address is:—45, Thorley Lane, Timperley, Cheshire (telephone: Ringway 2452).

WEST AND EAST MIDLANDS AND SHEFFIELD—Mr. E. J. Sweeting, for 12 years manager of the north-western area, has now moved south and relinquished his responsibility for Lancashire, Cheshire, and points north. He now takes over the east Midlands and Sheffield—in addition to Birmingham and the west Midlands, which he has always covered. His address is:—59, Selby Lane, Keyworth, Nottingham (telephone: Plumtree 2585).

SCOTLAND—This area remains, as hitherto, in the hands of Mr. T. H. Smith, whose address is:—29, Geils Avenue, Dumbarton (telephone: Dumbarton 1046).

LONDON, SOUTH WALES, AND THE SOUTHERN COUNTIES—The southern area is unchanged, and remains in the hands of Mr. E. G. Collis, operating from head office.

## *Passing Thoughts . . .*

IT would be more difficult for employers to grant a reduction of working hours than an increase in wages. It seems better that the trade unions, in their own interests, should continue to concentrate on securing improvements in wages so that their members will really benefit from a shorter working week once it is obtained and will not feel obliged to add to their earnings by working extra hours.—The Scotsman.

> *To HM Forces, one man; dismissed, one man; to be MP at Westminster, one man.—This was a recent labour force report submitted from Woolmet Colliery to Mr. G. R. Buchanan, general manager of the Lothians Area of the Scottish Divisional Coal Board.*

I appreciate that coal merchants find that everyone needs fuel at the same time during really bad weather, but the average wait seems far too long to those who depend on solid fuel. Not everyone has the necessary space or financial means to stock quantities in readiness for the winter; there must be many, who, like myself, are beginning to wonder if it might be wiser to change over to more easily obtainable heat.—Letter in The Guardian.

> *It may yet prove, with the difficulties facing the coal and shipbuilding industries, that in the next few years unemployment in Scotland will remain even more obstinately and more perceptively above the national level than in the past.*—PROF. A. K. CAIRNCROSS, *Professor of Applied Economics at Glasgow University.*

It would be idle not to recognize that we may indeed be faced with a period during which not only employment in the Scottish shipyards, but also in the many plants and organizations providing material, equipment, and services to the shipyards, may be substantially reduced.—LORD POLWARTH, chairman of the Scottish Council (Development and Industry).

> *If the Government put in jail everyone in Britain who is against nuclear war, the prisons could not hold them.*—MR. ABE MOFFAT, *president of the Scottish Area of the National Union of Mineworkers.*

All of us work to earn our livings, but I believe that in this country most of us have a sense of unity and common purpose which fortifies our joint endeavours and which is the foundation of our strength. As a result, our affairs have prospered and our future is bright.—MR. M. A. FIENNES, managing director of the Davy & United Engineering Company, Limited, Sheffield.

## Shell and ICI Agreement

AN agreement involving the construction of new and expanded plant for the manufacture of petroleum chemicals in New South Wales has been reached between Shell Chemical (Australia), Pty., Limited, and Imperial Chemical Industries of Australia and New Zealand, Limited. Shell Chemical will erect an ethylene manufacturing and purification unit at Clyde, in association with Shell's refinery there, and the ethylene produced will be piped to ICIANZ at Botany.

ICI plant at Botany is being further increased and the total investment incurred by the two companies will be over £A10,000,000. Construction of the new plant at Clyde is expected to start next year and it will come into production within two years.

# DURGAPUR'S FIRST BLAST FURNACE

## *End of Initial Stage of Works' Construction*

COMMISSIONING on Tuesday by the President of India, Dr. Prasad, of the first blast furnace at the Durgapur Steelworks, West Bengal, celebrated the inauguration of an integrated steelworks and not just the completion of one blast furnace. The steelworks represents the largest single export order ever obtained by Great Britain. The contract, valued at £105,000,000, is being carried out for Hindustan Steel, Limited, by the Indian Steelworks Construction Company, Limited (ISCON), the consortium formed specially for the purpose.

The coke ovens are complete with a coal washery and by-products plant, while the blast furnace is complete with a gas-cleaning plant and pig-casting machine. The power plant is complete with all its standby units. In addition, the central engineering maintenance department, foundry, and stores department are very largely complete.

The works, which is 118 miles from Calcutta, will have a rated capacity of 1,000,000 ingot tons per annum, together with 360,000 tons a year of pig-iron. The provisional annual programme from the rolling mill and railway wheel and axle plant will be 790,000 tons.

### Completion in 19 Months' Time

The first stage of the works' construction is now completed. The second stage, which consists of a second coke-oven battery, benzol rectification plant, a second blast furnace, steel melting shop with three open-hearth furnaces, 42-in. blooming mill, continuous billet mill, sleeper bar plant, and oxygen plant, is due to be completed by April 30 next. Stage three is scheduled for completion a year later. This will include a third coke-oven battery, a third blast furnace, the remaining four open-hearth furnaces, 24-in. medium section mill, and continuous merchant mill. The fourth and final stage is due for completion by July 31, 1961. This stage will entail the remainder of the steel melting shop, the special casting shop, and the wheel and axle plant.

The 13 firms in the consortium, together with the work for which they are responsible, are:—Davy & United Engineering Company, Limited (rolling mills, wheel and axle plant, foundry, and central engineering maintenance shop); Head, Wrightson & Company, Limited (blast furnaces and ironmaking plant); Simon-Carves, Limited (coke ovens and by-products plant, power plant, steam and gas distribution); Wellman Smith Owen Engineering Corporation, Limited (open-hearth furnaces and steelmaking plant, cranes, soaking pits); Cementation Company, Limited (civil engineering, except coke ovens and power plant); British Thomson-Houston Company, Limited, English Electric Company, Limited, General Electric Company, Limited, and the Metropolitan-Vickers Electrical Company, Limited (electrical work); Sir William Arrol & Company, Limited (cranes and structural steel); Cleveland Bridge & Engineering Company, Limited, Dorman Long (Bridge & Engineering), Limited, and Joseph Parks & Son, Limited (structural steel).

When he inaugurated the first blast furnace, Dr. Prasad described the steelworks as a symbol of Indo-British collaboration in India's industrialization and he thanked the British Government for taking an active interest in giving concrete shape to this symbol. A distinctive and remarkable feature of the plant, he said, was that apart from producing about 1,000,000 ingot tons of iron and steel, it will produce a large number of by-products for which there was already a rising demand, and which were bound to give additional fillip to the process of industrialization to the country generally and the Durgapur area in particular.

The President of India complimented ISCON and the experts and technologists of the United Kingdom who had been responsible for planning and erecting the works. A good feature of the undertaking, he said, was that it was giving training to Indians. There were 350 technicians being trained in the United Kingdom to man the different sections of the plant on completion.

Mr. C. J. M. Alport, Minister of State for Commonwealth Relations, who attended the inauguration, said that it was a symbol of success for both countries and a splendid example of the Commonwealth co-operation which existed between the two countries.

## *Progress of Bhilai Steel Plant*

MUTUALLY congratulatory letters on the achievements of the Bhilai steel plant which is being built with Russian assistance in Madhya Pradesh in Central India have been exchanged between Mr. Kruschev and Mr. Nehru.

Mr. Kruschev said that "the builders of the Bhilai plant had gained a new victory of labour" in putting into operation a second open-hearth furnace, a rolling mill, and other equipment to complete "the whole metallurgical cycle." He sent his congratulations on this achievement, a symbol, he said, "of the inviolable friendship between our peoples."

In his reply Mr. Nehru said: "We look forward with confidence to further Soviet-Indian economic and technical co-operation in the great task . . . of building up a new India."

A FURTHER 20 EMPLOYEES of Hadfields, Limited, Sheffield steelmakers, have been admitted to membership of the firm's 25 Association having completed 25 years with the company. Each man was presented with a clock by the deputy chairman and managing director, Mr. Harold Humphries. The association was formed in 1952 with an initial membership of 1,157. It now has 1,449 members, 70 having been admitted in 1959.

*Appointments*

# New Research Chief for Hadfields

DEPUTY research controller since September, 1957, Dr. L. G. FINCH has been appointed to succeed Mr. T. H. ARNOLD as a local director and controller of the research department of Hadfields, Limited, the Sheffield steelmakers. Dr. Finch has also become a director of the subsidiary companies, Hadfields Steel, Limited, and Hadfields Forgings, Limited. His former position has been taken over by Mr. J. A. GRAINGER.

Mr. Arnold, who relinquished his appointments at the year-end, at his own request, will continue to serve the company as required. He joined the staff of the chemical laboratory of Hadfields in 1915 and in 1920 was placed in charge of the metallographic and corrosion laboratories. From 1920 to 1940 he was closely associated with many of the researches of the late Sir Robert Hadfield. Mr. Arnold carried out much original work into the constitution of manganese steel, in particular with respect to its applications to armour and parts of fighting vehicles. His work in connection with the development of manganese steel helmets undoubtedly saved many lives during the first world war, while his researches into the macro- and micro-structure of armour piercing shell and bombs made valuable contributions to increasing their service efficiency. Much of the background knowledge that he created proved of inestimable value to all the fighting services during the second world war.

Throughout the years Mr. Arnold has been responsible for the training of many men who owe much to his wide knowledge of ferrous metallurgy and his outstanding ability in imparting his knowledge to others. He has been closely associated with the development of corrosion and heat-resisting steels, and has contributed much to the Iron and Steel Institute and, later, the British Iron and Steel Research Association's work on improved steels to resist atmospheric corrosion. He has been an active member of the Sheffield Metallurgical Association, of which he was president in 1955.

---

Mr. R. A. CURTIS has been appointed secretary of the London Brick Company, Limited. He succeeds Mr. P. Ferguson, who has retired.

Mr. R. T. W. ANDERSON has been appointed district manager at the Birmingham works of British Electrical Repairs, Limited, succeeding Mr. J. Ashmore, who is retiring.

The Minister of Power has appointed Mr. J. JOHNSTON, honorary treasurer of Glasgow Corporation, to be a member of the Domestic Coal Consumers' Council.

Mr. G. R. DAVISON, who since September, 1954, has been head of the Department of Workshop Training at Loughborough College of Technology, has been appointed chief technical engineer with the Bryan Donkin Company, Limited, gas engineers, etc., of Chesterfield.

Mr. E. T. JUDGE, who was appointed assistant managing director of Dorman Long (Steel), Limited, a year ago, has now been appointed joint managing director. Mr. Judge has also been appointed an executive director of the parent company, Dorman, Long & Company, Limited.

Mr. A. DAVEY has been appointed joint managing director of Norris Warming Company, Limited, London, W.C.1, and Mr. N. ALDCROFT has been appointed joint managing director of F. A. Norris & Company, Limited, London, W.C.1, both subsidiary companies of Norris Warming (Holdings), Limited.

Mr. GEORGE FLEMING has been appointed manager of the Rosyth and Charlestown yards of Shipbreaking Industries, Limited, a Metal Industries, Limited, subsidiary. He has been in shipbreaking for the past 12 years and was formerly work study officer at Shipbreaking Industries' headquarters at Faslane on the Clyde.

Mr. PETER GOWER TREGELLES (38), deputy production manager (operations) of the No. 4 (Carlton) Area of the North-Eastern Divisional Coal Board, has been appointed production manager of the Alloa Area of the Scottish Division. Mr. Tregelles, who takes up his new post on February 1, is a graduate of Sheffield University and was for a time sub-Area production manager in the No. 2 (Doncaster) Area of the North-Eastern Division.

Mr. J. STANLEIGH TURNER has been re-elected president of the Coal Utilization Council for the 12th year in succession and Sir JOHN CHARRINGTON has been re-elected vice-president. Mr. Turner is a former deputy chairman of the East Midlands Divisional Coal Board and has also served as a part-time member of the National Coal Board. Sir John is chairman of Charrington, Gardner, Locket & Company, Limited, and is a director of a number of other companies.

Mr. FREDERICK WILLIAM DAWSON, legal adviser to the West Midlands Divisional Coal Board, has been appointed to a similar position in the South-Western Division, with head office in Cardiff. Mr. Dawson follows Mr. W. H. F. Barklam, who has retired after many years' association with the coal-mining industry. Mr. Dawson joined the legal staff of the National Coal Board in London in 1946. He was appointed deputy legal adviser to the West Midlands Division in 1952 and took up the senior post in 1955.

The following official Fellowships at Churchill College, Cambridge, have been announced:—Mr. R. H. TIZARD to be tutor, director of studies and college Lecturer in Engineering from October 1, 1961; Dr. R. W. HEY to be director of studies and college Lecturer in Geology, Dr. A. KELLY to be college Lecturer in Metallurgy, and Mr. R. K. LIVESLEY to be college Lecturer in Engineering, all from October 1, 1960. A Rockefeller Foundation donation of $100,000 will go towards the cost of visiting Fellows and distinguished scientists.

Mr. S. R. WILKINS has been appointed managing director of Avo, Limited, manufacturers of electrical measuring instruments, etc., of London, S.W.1, in succession to Mr. J. H. Rawlings, who has relinquished the position because of indisposition but who remains on the board as deputy chairman. The company is a subsidiary of Metal Industries, Limited. Mr. Wilkins has joined the board of another Metal Industries subsidiary, Taylor Electrical Instruments, Limited, Slough (Bucks). Mr. E. STRAUSS has been appointed a director and general manager of this company and has also joined the Avo board.

## *Recent Wills*

| | |
|---|---|
| PARKER, G. T., of Boston (Lincs), coal merchant ... | £25,461 |
| LAWSON, A. W., a former director of Shell-Mex & B.P., Limited ... ... ... ... ... ... ... | £55,471 |
| HESKETH, FRANK, formerly chairman and managing director of Isaac Butterworth, Limited, iron founders, etc., of Rochdale ... ... ... ... | £14,097 |
| RAVENSHEAR, E. W., Under-Secretary, Ministry of Fuel and Power, 1947-54, part-time adviser, Ministry's Safety and Health Division, 1954-57... | £19,853 |
| HIRST, STANLEY, chairman and joint managing director of Henry Brook & Company, Limited, iron-founders and structural engineers, of Huddersfield | £4,057 |

# *Not Without Promise*

## FUTURE FOR COAL IN EUROPE

THOUGH the demand for energy can be expected to continue to increase, it appears clear that the share of coal in the energy market will be a relatively declining one, states the report, "The Coal Situation and Prospects in Europe in 1958-59," issued by the Secretariat of the United Nations Economic Commission for Europe. The actual level of coal consumption, however, will depend on the extent to which it can compete with other forms of energy.

In western European countries hard coal and lignite at present account for 64 per cent. of the total consumption, hydro-electricity for 13 per cent., petroleum products for 21 per cent., and natural gas for 1 per cent. The trend is clearly shown by comparison with the percentages for 1950 when hard coal represented 79 per cent., hydro-electricity 10.5 per cent., petroleum 10 per cent., and natural gas 0.5 per cent.

The structural changes in energy sources were, in the earlier post-war years, due, in the main, to the slow rate of growth in coal production. More recently the cheapening of fuel oil has become an important factor. Increasing industrial activity has not had much time to have a great effect on the depressed condition of the coal market and the high level of pithead stocks—33,000,000 tons in the European Coal and Steel Community and 35,000,000 tons in Britain in October, 1959.

### Coal Must Compete

The report examines this and other contributory causes of costly stockpiling and sees a future not without promise. It must be some time before the improvement in industrial activity can lead to an increase in demand for coal and a considerable time before surplus stocks can be absorbed. In the long run, however, Europe will require much more energy than it now consumes and, providing it is competitive with other forms of energy (mainly oil and natural gas) there is room for coal consumption to increase.

There is no indication that expansion in those sectors where coal is especially or suitably indispensable (blast furnaces, thermal power stations, etc.) will slacken and, therefore, that coal consumption will not increase in these sectors. Where alternative forms of energy can be easily substituted—railways, general industry, domestic supplies—coal is likely to lose ground.

Future difficulties that could stem from uninterrupted imports of oil and coal are not ignored and it is pointed out that in the long run the level of coal output will be increasingly determined by competition from imported coal and other fuels. The industry must therefore reduce its costs to a competitive level.

Recent measures taken have shown that the industry is prepared to adapt itself, but demand is liable to fluctuate and when demand falls temporarily the coal industry cannot quickly adapt itself to the fall without serious financial and social consequences. Also, there is the danger that measures taken to reduce output might entail a reduction in capacity which is more than the long-term prospect justifies. There is, therefore, an increasing pressure in a number of countries to adjust imports to home production and to ensure that the coal industry has a chance to compete with other fuel supplies under similar conditions.

In eastern countries, dealt with separately in the report, similar difficulties are not encountered and coal still accounts for a considerable proportion of the total consumption of commercial forms of primary energy. Nevertheless, as in western Europe, the use of coal is diminishing. In eastern Europe (excluding the USSR) in 1955 coal accounted for 90 per cent., petroleum products for 5 per cent., natural gas for 4 per cent., and hydro-electricity for 1 per cent. The 1950 percentages were, respectively, 93, 4, 2.5, and 0.5.

In the same five-year period in Russia the change has not been so marked. In 1955 coal accounted for 75 (74) per cent., petroleum products for 9 (7) per cent., natural gas for 3 (2.5) per cent., hydro-electricity for 3 (2) per cent., and peat, etc., for 10 (14.5) per cent.

## EUROPE'S COAL STOCKS DECLINING

PITHEAD coal stocks in the European Coal and Steel Community in November declined to 32,409,000 metric tons. At the end of October they were 32,854,000 tons and a year earlier, 24,620,000 tons. The fall occurred principally in western Germany. Belgium reported a slight fall in stocks, but in France they continued to rise.

Stocks of coke at coking plants were stationary in November, amounting to 8,634,000 tons at the end of the month, against 8,627,000 tons a month earlier and 6,624,000 tons at the end of November, 1958.

Short-time working in November was equivalent to a reduction in coal output of 423,000 tons—less than half the October figure of 868,000 tons. For the first 11 months of this year, the total tonnage not produced because of short-time working was 11,926,000 tons and the average number of days lost ranged from 2.70 in the Lorraine (France) coalfield and the Aachen (Germany) coalfield, to 54.53 in the Belgian Campine. In the Ruhr 11.24 days were lost and in the south Belgian coalfield 47.77.

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CERTIFICATES AND CHEQUES to a number of employees in recognition of their services to the firm over periods of between 25 and 50 years have been presented by Cmdr. P. W. Kent, RN, chairman of George Kent, Limited, Luton switchgear manufacturers. Twenty-four members of the company in 1959 completed 25 years' service, while two people present at the ceremony received special awards for 45 and 50 years' service. The scheme was inaugurated in 1935.

# *Corner Tube Boiler Licence Agreement*

THE licence agreement recently entered into by Newton, Chambers & Company, Limited, Thorncliffe, near Sheffield, with the Corner Tube Boiler Company, Limited, covers the supply and installation of corner tube boilers of up to 5,000 lb. evaporation fitted with any type of fuel burner and corner tube boilers for steam up to 10,000 lb. evaporation, or for hot water up to 10,000,000 BTU per hour, capacity when fitted with Emma stokers and, where additionally required, with other types of fuel burners for the use of alternative fuels. It is not, however, an exclusive agreement for any size except for coke-fired boilers using the Emma firing system.

Babcock & Wilcox, Limited, can supply either steam or hot water corner tube boilers of any capacity, except where Emma stokers are required, and the other licencees, J. Hickey & Sons (C.T. Boilers), Limited, will continue to supply corner tube steam boilers up to 15,000 lb. evaporation, except in those cases where Emma stokers are preferred and for which Newton, Chambers is the sole licencee in Great Britain of the patentees, Bronswerk N.V., Holland.

The corner tube boiler is of unique design relying upon the heavy downcomers at its corners to support the tube banks and thereby dispensing with the need for an external skeleton of structural steelwork and is suitable for working at high pressures. The Emma stoker is specially designed for the most efficient use of solid fuels, particularly coke.

# Iron-ore Imports

IMPORTS of iron ore and concentrates (except chrome iron ore and roasted iron pyrites) in November, and the totals for the first 11 months of last year and 1958, are shown in the table below. The figures for 1959 are not completely comparable with those for 1958.

| From | Month ended Nov. 30. | Eleven months ended November 30. | |
|---|---|---|---|
| | 1959. | 1958. | 1959. |
| | Tons. | Tons. | Tons. |
| Sierra Leone .. .. .. | 67,045 | 658,763 | 658,535 |
| Canada .. .. .. .. | 397,181 | 2,120,800 | 2,585,992 |
| Other Commonwealth countries and Eire .. .. .. .. | 1,850 | 2,405 | 22,847 |
| Sweden .. .. .. .. | 229,878 | 2,863,231 | 2,838,240 |
| Norway .. .. .. .. | 44,331 | 263,302 | 251,056 |
| France .. .. .. .. | 35,193 | 445,988 | 391,740 |
| Portugal .. .. .. .. | 39,419 | 121,871 | 234,990 |
| Spain .. .. .. .. | 29,036 | 562,401 | 420,375 |
| Algeria .. .. .. .. | 134,464 | 1,318,080 | 1,301,351 |
| French West Africa .. .. | 28,000 | 322,072 | 220,425 |
| Tunisia .. .. .. .. | 44,950 | 525,377 | 472,404 |
| Morocco (excluding Tangier) .. | 30,900 | 449,750 | 352,797 |
| Liberia .. .. .. .. | 37,470 | 254,129 | 333,293 |
| Venezuela .. .. .. .. | 156,439 | 1,313,335 | 1,264,793 |
| Brazil .. .. .. .. | 62,517 | 520,083 | 508,892 |
| Other foreign countries .. .. | 24,815 | 192,836 | 161,142 |
| TOTAL .. .. .. | 1,363,488 | 11,934,423 | 12,018,872 |

RUMOURS THAT Derwenthaugh staithes on the river Tyne were to be closed during the next few months have been denied by the Durham Divisional Coal Board.

# Victor Products Counters Coal Industry Contraction

MINING equipment manufacturers, Victor Products (Wallsend), Limited, reports a drop of 16.5 per cent. in turnover owing to the contraction of the coal-mining industry. In his annual statement, the chairman and managing director, Mr. R. W. Mann, says: "No one foresaw that almost within a matter of months the coal-mining industry would turn from a 15-year expansion programme to near collapse."

Among steps taken to reorganize in order to bring turnover again up to the company's productive capacity are the establishment of an engineering development section to consider new products, the formation of a sales promotion department, changes in the outside sales department, and the appointment to the board of Mr. S. I. Gregory, accountant and secretary, and Mr. S. Turnbull, cost controller.

Commenting on the changes, Mr. Mann forecasts that under the new sales efforts, existing products will bring sufficient business to ensure that the financial year ending April, 1960, will be at least as good as the previous 12 months, with every prospect of being slightly better. Trading profits amounted to £186,558 (£272,235) and the dividend is 20 per cent.

# HEALTHIER DEMAND FOR MUREX PRODUCTS

IMPROVEMENT in demand for the products of Murex, Limited, metallurgists, of Rainham (Essex), in the opening months of the current year has been fully maintained. An interim report states that trading results for the half-year to October 31, 1959, are in excess of those for the corresponding period of 1958. It is stated that present indications are that group trading results for the current financial year to April 30, 1960, will show a marked improvement on those for the preceding year.

There was an increase in sales turnover of more than 20 per cent., mainly representing increases in the volume of products sold, selling prices having remained substantially constant. Demand for welding electrodes was fully maintained, but sales of welding equipment were slightly lower.

The interim dividend is restored to 7½ (5) per cent. on the £2,200,000 ordinary. The final for 1958-59 was 10 per cent.

# RTB's Electrical Sheet and Strip Sales

ALL sales of electrical sheet and strip manufactured at the Midland section of Richard Thomas & Baldwins, Limited, will in future be handled by Richard Thomas & Baldwins (Sales), Limited. The present Midland section sales department for electrical sheet and strip is being transferred to Richard Thomas & Baldwins (Sales), but will continue to operate from Wilden, Stourport-on-Severn.

Mr. P. M. J. Boulasse has been appointed manager of the department and will operate from the head office of Richard Thomas & Baldwins (Sales) at 47, Park Street, London, W.1. Mr. G. F. Astle and Mr. R. G. Martindale have been appointed joint sales managers of the department and they will operate from Wilden, to which office all correspondence concerning sales matters should continue to be addressed.

# European Economic Recovery

## REFLECTED BY STEEL OUTPUT FIGURES

A FAIRLY clear picture of western Europe's economic recovery and activity during last year is afforded by the latest issue of the Quarterly Bulletin of Steel Statistics for Europe published by the United Nations Economic Commission for Europe. Steel output in the first nine months of 1959 reached 67,400,000 tons, exceeding the 1958 production level for the same period by 2,100,000 tons or 3 per cent. In the European Coal and Steel Community output, at 45,800,000 tons, rose 2,000,000 tons, or 5 per cent.

During the first quarter of 1959 steel output in western Europe remained 1,900,000 tons (8 per cent.) below the corresponding 1958 figure. By the second quarter the tide had turned and output was 1,700,000 tons (7 per cent.) up and by the third quarter the boom was well on the way, output almost reaching the crude steel production level of the first quarter of 1958 and exceeding the third quarter of 1958 by 2,500,000 tons, or 12 per cent.

The increase in the ECSC was achieved virtually during the third quarter alone. Considering the individual Community countries it can be seen that western Germany's increase in steel output of 1,300,000 tons represents 65 per cent. of the total increase of the Community during the nine months.

### Effect of US Steel Strike

In the UK steel output during the first nine months of 1959 was 14,700,000 tons, still 350,000 tons, or 2 per cent. below the corresponding production in 1958. However, during the second quarter, when output was about 10 per cent. below the peak second quarter rate reached in 1957, production recovered to about the same level as in the corresponding quarter of 1958 and in the third quarter rose by 12 per cent. compared with the year previous.

Russia recorded a production increase of 3,600,000 tons (9 per cent.) compared with the previous year and the increase in steel output during the same period in the remaining eastern European countries amounted to 1,400,000 tons.

For the first six months of 1959 (the third quarter having been marred by the steel dispute), the United States' steel output of 58,300,000 tons was over 24,000,000 tons (70 per cent.) higher than in 1958. The rate of production for the first six months represented an annual production of over 116,000,000 tons, or 11,000,000 tons more than the existing record level attained in 1955. However, in spite of the immense impetus in the last few weeks in the US steel drive, the 1955 record is not likely to be beaten.

During the first half of 1959, world production of crude steel (excluding mainland China) was about 22 per cent. higher than in the same period of 1958. A comparison on a nine-monthly basis, however, appears impossible due to the American strike which resulted in a production loss of about 25,000,000 tons of crude steel.

The volume of imports of finished steel products in such western European countries as Belgium and Luxembourg, France and the Saar, western Germany, Italy, the Netherlands, Sweden, and Switzerland, increased by 6 per cent. during the first six months of 1959, but among those countries different trends were observed. The most important changes occurred in the case of the UK and France/Saar, where a drop of imports during the first six months, compared with the same period of 1958, amounted to 40 and 37 per cent., respectively. While steel imports in the case of the Netherlands remained virtually unchanged, the respective increases in the case of the other countries were:—Belgium/Luxembourg, 48; Italy, 39; Switzerland, 30; western Germany, 28; Sweden, 7.

The recovery of steel demand during 1959 is also illustrated by the increase of exports by 19 per cent. in the January-June period, compared with the corresponding period in 1958. Most striking was the 57 per cent. increase in the France/Saar exports, though western Germany's increase was 25 per cent. During the same period UK steel exports diminished by 3 per cent. and Italian exports by 16 per cent.

## *Outstanding Rise in ECSC Rolled Steel Orders*

ROLLED steel orders received by producers in the European Coal and Steel Community during November amounted to 4,647,000 metric tons, compared with 4,826,000 in October. Domestic orders accounted for 2,967,000 tons, other ECSC countries 641,000 tons, and the remainder from countries outside the Community. To the end of October 34 per cent. more orders for rolled steel have been received than in the same period last year—45,765,000 (34,189,000) tons.

West Germany heads the list with an increase in orders of 110 per cent. Belgium had a 48 per cent. increase, Luxembourg 47 per cent., Italy 35 per cent., Holland 18 per cent., and France 10 per cent. The French figure is not realistic as she experienced a boom in steel orders much earlier when currency reform was introduced.

The overall rise was reflected in the Ruhr output of pig-iron, which increased by 34.8 per cent. in October, compared with a year earlier. Raw steel output was up by 34.2 per cent. In other West German steel-producing areas the pig-iron output increase reached only 18.6 per cent. and raw steel 24.2 per cent.

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COAL SHIPMENTS from Blyth (Northumberland) during November amounted to 471,474 tons, an increase of over 60,000 tons on last year. The total for the first 11 months of the year was 4,695,445 tons—128,827 tons more than 1958.

# Obituary

## MR. JAMES THOMSON

DEATH occurred on Christmas Eve of Mr. James Thomson, who was formerly conveyor engineer of Mavor & Coulson, Limited, the Glasgow manufacturers of mining machinery, etc. In recent years and until his death, Mr. Thomson's services were retained by the company in an advisory capacity.

He received his technical education at the Royal Technical College (now the Royal College of Science and Technology), Glasgow, and served his apprenticeship with three west of Scotland engineering firms. In 1917, he went to London and was engaged with a conveyor engineering firm as a designer and, later, as a contracts engineer. In 1925, he joined the conveyor department of Mavor & Coulson, Limited, and in the following year a troughed belt conveyor installation designed by him for conveying 200 tons of coal an hour up a drift rising one in three at Bargoed Colliery, South Wales, was put to work successfully. Mining history was thus made. It was in 1927 that Mr. Thomson designed and installed in a Leicestershire colliery the first troughed belt conveyor to connect an advancing longwall face with a fixed loading station.

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Mr. GEORGE HAVELOCK ALLEN, who died on Monday, was formerly manager of Harland & Wolff, Limited, at Southampton, retiring in 1952.

Mr. BERT WEBSTER, formerly managing director of Webster Bros. (Old Hill), Limited, dropforgers, etc., of Old Hill (Staffs), has died at the age of 68.

Mr. A. P. PITTAM, former commercial manager of the now-closed Normanby Iron Works Company, Limited, Middlesbrough, has died at the age of 66. He joined the firm in 1914.

The death has occurred of Mr. ARTHUR PERCY HARROP, head of Yates, Haywood & Company, Limited, general ironfounders and stove grate manufacturers, of Rotherham. He was 79.

The death took place on Monday of last week of Mr. T. B. M. (TOM) DAVISON, managing director of Robert Peel & Company (Pudsey), Limited, sheet-metal workers, etc., of Pudsey, Leeds.

One of the founders of Fyfe & McGrouther, Limited, suppliers of shipyard and mining equipment, etc., of Glasgow, Mr. JAMES GRAHAM, has died at the age of 51. He was a director of the company.

Mr. R. J. OWEN PLOWRIGHT, who was a director of Plowright Bros., Limited, colliery and mechanical handling engineers, etc., of Chesterfield, until he retired a few years ago, has died at the age of 49. He entered the business on leaving school.

Mr. T. S. GOULDING, an engineer on the design staff of John Miles & Partners (London), Limited, consulting engineers, of London, E.C.4, died suddenly from a heart attack at Dublin Airport on December 19 on his return journey from Irish Steel Holdings, Limited, Haulbowline (Co. Cork). He was 48 and had been with the company since 1946.

Mr. WILLIAM FORREST died in Darlington Memorial Hospital on Monday from injuries sustained in a road accident. Mr. Forrest was in business as an engineer's agent at Middleton-St. George (Co. Durham), trading as W. S. Forrest & Company. Among the companies represented by his firm in this country is Heliosapparate Wetzel & Schlosshauer, G.m.b.H., of Heidelberg, western Germany.

Mr. STANLEY JOHN BELLAMY, general manager of Peter Brotherhood, Limited, engineers and ironfounders, of Peterborough, died on Monday of last week at the age of 51. He started his career with the company as an office junior. In 1944 he became a director and was appointed assistant general manager in 1946 and general manager in 1957.

The death has occurred at the age of 70 of Mr. DAVID M. BROWN, former manager of the marine branch of James Howden & Company, Limited, the Newcastle-upon-Tyne engineers. He was well known throughout north-east coast marine engineering circles and also on Clydeside, where he was for many years before transferring to Newcastle.

The death is announced of Dr. ALBERT CECIL PEPPER, managing director of Alexander Duckham & Company, Limited, lubricant manufacturers, of London, W.6. He had been with the company since 1936, when he joined it as a research chemist. Dr. Pepper joined the board in 1941. He was joint managing director from 1952 until his appointment early in 1959 as managing director.

Mr. HAROLD BENNETT, who was mayor of Lincoln in 1944-45, died on Monday, a few days before he was due to retire from his position as factory relations officer to Robey & Company, Limited, the Lincoln engineers and boilermakers, etc. He joined Robey & Company after the last war and previously spent many years with the Clayton Dewandre Company, Limited, motor engineers, etc., also of Lincoln.

Mr. THOMAS BABINGTON MACAULAY, who retired as general manager and a director of the Glasgow engineers and iron and steel stockholders, etc., P. & W. MacLellan, Limited, in 1957, died on Monday of last week. He started work as an apprentice in the firm's Clutha Works in 1905 and became works manager in 1919, general manager in 1934, and a director in 1940. He was a former chairman of the Scottish branch of the Institution of Structural Engineers.

Mr. WHEATON T. FREESTONE, who in 1957 retired as works director and deputy chairman of Peter Brotherhood, Limited, engineers and ironfounders, of Peterborough, after having been with the company for 50 years, died suddenly on Wednesday of last week. He was 74. Mr. Freestone began his career with the company in the machine shops and after various promotions became works manager in 1918, being appointed a director in 1931 on the reconstruction of the company.

The death has taken place in New York of Mr. L. C. BOOS, who was a director of the North British Rubber Company, Limited, Edinburgh, U.S. Rubber International (Great Britain), Limited, London, S.W.1, the Rubber Regenerating Company, Limited, Manchester, and Lastex Yarn & Lactron Thread (Overseas), Limited, London, S.W.1. He was 56. Mr. Boos began his career in America's rubber industry at the age of 20. In 1941 he became head of the U.S. Rubber Export Company, Limited, and continued in that capacity until 1952, when the export company was dissolved and he was made vice-president and general manager of the newly formed international division.

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A MERGER has taken place between two Clyde shipbuilding firms which specialize in the construction of dredgers. They are William Simons & Company, Limited, and Lobnitz & Company, Limited, and in future they will be known as Simons-Lobnitz, Limited. Both firms are subsidiaries of G. & J. Weir, Limited, Glasgow.

## *Company News*

# A £9¾ MILLION BID

## Metal Industries' Offer for Lancashire Dynamo

NEWS of the proposed £9,750,000 bid by Metal Industries, Limited, for Lancashire Dynamo Holdings, Limited, ruffled the traditional quiet of the City on Christmas Eve. Metal Industries is the holding company for a group which has interests not only in metals and engineering, but which has recently been expanding in the electrical switchgear and instrument field. Lancashire Dynamo is the holding company for a group of electrical engineering companies. The offer is made on the assumption that there have been no material changes in Lancashire Dynamo's financial position since the end of its financial year on December 31, 1958.

The basis of the offer is £4 new Metal Industries ordinary stock plus 30s. cash for every £5 ordinary stock in Lancashire Dynamo; £6 new Metal Industries 5 per cent. preference stock for every £5 of 5½ per cent. Lancashire Dynamo preference stock. The offer for both classes of stock is subject to acceptance by not less than 90 per cent. by value of the holders of each class and to the necessary approval being given to the increase in the authorized capital of Metal Industries.

Upon acceptance a dividend of 10 per cent. will be paid to Lancashire Dynamo ordinary stockholders to cover the period up to March 31 of this year. The new Metal Industries ordinary will not rank for any final dividend for the year to March 31, 1960, but will rank *pari passu* thereafter.

It is envisaged that the chairman and deputy chairman of Lancashire Dynamo, Lt.-Col. G. S. Marston and the Earl of Halsbury, should join the board of Metal Industries and that Sir Charles Westlake and Mr. J. Black, chairman and vice-chairman of Metal Industries, should join the Lancashire Dynamo board.

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## Standard-Triumph and Hall Engineering Deal

REPRESENTING a further step in the policy of Standard-Triumph International, Limited, of building up its own manufacture of components and of expanding the body-pressing side of its business, the directors have announced that agreement in principle has been reached to buy for about £2,000,000 the motor-car body-building and die-making activities of Hall Engineering (Holdings), Limited, London, W.1. Factories at Speke (Lancs), Dunstable (Beds), and Basildon (Essex) are involved.

The directors emphasized that if the conversations reached a satisfactory conclusion it would be their intention to continue to reserve capacity for existing customers of Hall Engineering and, indeed, to expand the body-pressing and die-making businesses outside the Standard-Triumph group. At the recent annual meeting, the chairman, Lord Tedder, announced that Standard-Triumph was negotiating to buy for cash the capital of Alforder Newton, Limited, Hemel Hempstead (Herts), which makes all front suspensions for the Standard-Triumph range.

Hall Engineering, besides its motor components business, manufactures a wide range of steels and tools for a variety of purposes and is interested in reinforced concrete structures, office furniture, and aircraft wind tunnels.

It is the board's intention to use the funds realized to develop the remaining divisions of the company.

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EXPERT TOOL & CASE HARDENING COMPANY, LIMITED—There is no dividend on the 6½ per cent. redeemable cumulative preference shares for the six months ended December 31, 1959.

WEARDALE LEAD COMPANY, LIMITED—Dividends are being resumed with 7½ per cent. for the year ended September 30, 1959. The last payment, for 1956-57, was 5 per cent. Net profit, after tax of £4,513, compares with the previous loss of £2,540.

H. W. KEARNS & COMPANY, LIMITED, machine-tool makers, of Altrincham (Ches)—Sir Lionel Kearns, chairman, said at the annual meeting last week that the improvement in the last part of the financial year had continued. The tendency was for the rate of order booking to rise. There were more inquiries, he said, and the position was healthy.

HUNSLET (HOLDINGS), LIMITED—The company, which was formed in 1958 to amalgamate four subsidiaries, the principal being in the locomotive building industry, announces a dividend of 7½ per cent. for the year to July 31, 1959, as forecast when the shares were introduced to the market. Group net profit is £37,361 (£103,951) after tax of £34,600 (£106,180).

FREDERICK BRABY & COMPANY, LIMITED, structural engineers, manufacturers of metal plate and sheet metal work, etc., of London, N.W.1—Dividend for the year ended September 30, 1959, is maintained at 5 per cent. Trading profits fell to £57,320 (£353,321), there was no tax, compared with £5,943 the previous year, and the net loss amounted to £172,576, against a profit of £69,544.

JOB WHEWAY & SON, LIMITED, manufacturers of pulley block chains, of Walsall (Staffs)—Last week's extra-ordinary meeting approved the merger with Watson & McLean, Limited, the Glasgow chainmakers, and the name of the company has been changed to Wheway, Watson & McLean, Limited. All the Watson & McLean shareholders accepted the share exchange offer.

REDPATH, BROWN & COMPANY, LIMITED, structural

engineers and iron and steel stockholders, of Edinburgh—Trading profit for the year to September 30, 1959, is £1,193,305 (£1,417,413), tax accounts for £282,823 (£884,617), and the profit balance is £899,154 (£458,176). The directors state that output was the lowest since 1949, demand shows little improvement and the order-book remains below the level of recent years.

RHEOSTATIC COMPANY, LIMITED—The directors expect to pay a final dividend of 14 per cent. for the year ended September 30, 1959. Preliminary figures in respect of 1958-59 indicate that profits are likely to show an increase over the previous year of approximately 35 per cent. A 14 per cent. final would make a 20 per cent. total for the year, compared with 12½ per cent. previously, when 7½ per cent. was paid as a final.

THOMAS BLACKBURN & SONS, LIMITED, structural and general engineers, of Preston—The company has made a second distribution to moratorium creditors which brings the total payments to date against the moratorium debts up to 10s. in the pound. The basis of the distribution is a minimum payment of £10 to each creditor to whom more than £10 is owing, plus a *pro rata* distribution at the rate of 5s. 9d. in the pound on the balance of the amount outstanding. The directors state that further distributions will be made as soon as funds become available.

TURNER & NEWALL, LIMITED, holding company for manufacturers of asbestos and asbestos products, of Manchester—With the steady growth of world competition, advances in turnover are not necessarily paralleled by corresponding advances in profit, states the chairman, Mr. R. G. Soothill. Recovery in the parts of the world where the company has interests varied in degree and speed and in all the circumstances the gross trading profit "can be regarded as satisfactory." Group net profit rose by £921,401 to £6,894,925 and the dividend is increased by 5 per cent. to 20 per cent.

BRITISH ROLLMAKERS CORPORATION, LIMITED—At an extra-ordinary meeting on Wednesday the authorized capital was increased to £3,190,847 (£2,500,000) for the purpose of acquiring the ordinary and preference capital of Richard Lloyd, Limited, Birmingham machine-tool makers, engineers, etc. The offer has been accepted by over 96 per cent. of the holders of the ordinary and, although the closing date was yesterday (Thursday), any acceptances received within the next few days will be included. The closing date of the preference offer is January 5, but late acceptances will be included up to January 31.

C. H. BAILEY, LIMITED, shiprepairers, etc., of Newport (Mon)—It is proposed to increase the capital of the company by £500,000 by the creation of 2,000,000 "A" ordinary shares of 5s. each, and to capitalize £165,773 of general reserve and make a scrip issue to ordinary and "A" ordinary stockholders in the proportion of one for six. It is also proposed to make sundry alterations in the company's memorandum and articles, including provision for the reduction of the size of the units in which the ordinary stock is transferable, from 5s. to 1s. The board has agreed, subject to the passing of the resolutions, at an extra-ordinary meeting on January 22, to allot 400,000 new "A" ordinary shares of 5s. each to Maltese interests at 6s. 9d. each ex the capitalization rights.

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THE SECOND Norwegian order for a bulk-carrier within the past month has been placed with Lithgows, Limited, Port Glasgow, by Simonsen & Astrup, Oslo. It is for a 22,000-ton d.w. vessel for delivery in mid-1961.

# *Ore Chartering*

DESPITE the good miscellaneous demand from the Mediterranean area to the Continent, only a few fixtures have been reported, but in general rates are unchanged, remaining steady. The Indian ore market to the Continent is still firm and contract tonnage is reported fixed from Marmagoa at 55s., although pressure on the part of charterers to fix is not quite so strong and it is rather doubtful if the 55s. contract with good loading could be repeated. Brazilian rates are still steady with Vitoria/Poland fixing at 55s. 6d., gross terms, for 9,800 tons, December.

West African ore charterers are still open to the Continent.

In the phosphate section Sfax/Leith fixed 3,000 tons for December at 47s., but the main inquiry to the UK is from Casablanca, where two vessels, both 9,000 tons and again both December shipment, have been fixed at 28s. 6d. and 29s., respectively. Casablanca/Hull reports 55s. for 1,500 tons, prompt shipment, and there is still a good number of inquiries to both east and west coast UK.

Pyrites paid 30s. Morphou Bay/Rotterdam for 9,800 tons, January, and from Setubal 3,200 tons has been fixed at 32s. 6d., prompt, and 28s. 6d. for December/January to Holland.

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## Massey-Ferguson's Senior UK Appointments

FURTHER senior executive appointments relating to the United Kingdom are announced by Massey-Ferguson, Limited. They are:—Director planning and procurement, Mr. I. J. Wallace; director marketing, Mr. T. V. Knox; director personnel and industrial relations, Mr. A. J. Scamp. For the time being the appointment of director manufacturing will be filled by Mr. H. A. Wallace, vice-president, manufacturing, Massey-Ferguson, Limited, and that of comptroller by Mr. J. G. Staiger, assistant to the president.

The name of Massey-Ferguson (Great Britain), Limited, has been changed to Massey-Ferguson (United Kingdom), Limited. This subsidiary company will provide the management functions required for UK operations. The directors are Col. W. E. Phillips, Mr. A. A. Thornbrough, Mr. E. W. Young, Mr. M. W. McCutcheon, Mr. J. A. McDougald, Mr. E. P. Taylor, Mr. C. W. Webster, Mr. L. Harper, Mr. T. V. Knox, Mr. E. M'Ewen, Mr. M. I. Prichard, Mr. A. J. Scamp, Mr. J. G. Staiger, Mr. H. W. Waite, Mr. H. A. Wallace, and Mr. I. J. Wallace. The secretary is Mr. Russell W. Evans.

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## John Brown's Share in Electronics Company

IN conjunction with the Solartron Electronics Group, Limited, Thames Ditton (Surrey), John Brown & Company, Limited, Sheffield, is forming a new company for the purpose of entering the field of automation as applied to warehousing and merchandizing. An official announcement on the new company will be made when Board of Trade formalities have been completed.

European rights on American inventions in the field have been acquired by the new company. The partnership is understood to be a joint enterprise and there is no question of one firm taking over the other.

# BAR MILL MODERNIZATION

## *Steel, Peech & Tozer Project*

OVER £400,000 is to be spent by the Steel, Peech & Tozer branch of the United Steel Companies, Limited, on the modernization of its semi-continuous bar mill which was laid down nearly 40 years ago. The existing drive is through line shafting and gearing from a single 3,000 h.p. variable speed a.c. motor and, in order to introduce greater flexibility into the mill's operation, it is planned to replace this drive with a number of separate variable speed d.c. motors, totalling 3,400 h.p. and to renew some of the rolling mill stands. Work has begun on the scheme.

The first stand on the present mill is a pinch roll stand which is to be replaced by a modern 18-in. horizontal roll stand. The first two stands of the roughing section of the mill are also to be replaced by new 18-in. horizontal and vertical stands, respectively. The horizontal stands will be powered by a single 350 h.p. d.c. motor and the vertical stand will be equipped with a 250 h.p. d.c. motor.

A series of paired drives is to be installed on the remaining mill stands. Thus, stands Nos. 3 and 4 will be driven by a 600 h.p. d.c. motor, Nos. 5 and 6 by a 700 h.p. d.c. motor, Nos. 7 and 9 by a 750 h.p. d.c. motor, and Nos. 8 and 10 by a 750 h.p. d.c. motor.

### Personnel Appointments

Other features of the modernization scheme include the installation of a flying shear after No. 6 roughing stand, the provision of a modern oil lubrication system throughout the mill, and the installation of a high-pressure water system for billet descaling. The latter will make it possible to improve the surface condition of the rolled bars, particularly in the case of material destined for bright drawing.

The main contractor is the Brightside Foundry & Engineering Company, Limited, Sheffield, while the electrical equipment, including the motors and rectifiers, will be supplied by Associated Electrical Industries, Limited, Rugby.

Consequent upon this development, Mr. H. Woolley is to be attached to Mr. D. E. Billington, assistant works manager at the Templeborough mills, as adviser on the bar mill conversion from July 1 next until he retires on August 31. Mr. H. Wass is to become manager-designate of the bar mill from April 1, and will take over as bar mill manager from July 1.

## How Suggestion Schemes Can Be of Value

"SUGGESTION schemes are of value only if management is prepared to take them seriously and to go to some trouble to make them work." Mr. Wilfred Padley, managing director of Brookhirst Igranic, Limited, a member of the Metal Industries, Limited, group, emphasized this in making presentations to two employees on Wednesday of last week.

Mr. Leslie Shaw, a mechanic, received a cheque for £190 for an idea for an improvement to a limit switch: Mr. Alfred Pitson, a sales engineer, received £90 for a suggested alteration in a relay.

## *Brazil's Steel Industry Expanding*

JUDGING by recent reports from Brazil, the emphasis in the field of development would appear to be on expanding steel production. The total production of raw steel by steelworks at present being erected or extended will, it is estimated, amount to 3,500,000 metric tons by 1962. Some 65 per cent. of this output will be processed to coarse and fine sheet.

Forecasts are that by the second half of this year the Volta Redonda steelworks will be producing at the annual rate of 1,200,000 tons, that the Companhia Belgo Mineira will achieve 500,000 tons a year by 1962, and the combined annual output of the Cosipa and Usiminas steelworks will be about 1,000,000 tons.

Mineração Geral do Brasil, main company in the large Jafet group in the ferrous metals industry, which had an annual production rate of 188,700 tons in 1958, is to raise its annual output to 200,000 tons. The company, member of a group which exploits iron ore, manganese ore, and dolomite and operates blast furnaces in Mogi das Cruzes, São Paulo, and Honório Curgel and reduction furnaces at Nova Iguaçu, has recently raised its capital to 1,000,000,000 cruzeiros.

In order to finance a building-up of capacity to an annual level of 120,000 tons, the Siderúrgica Aliperti in São Paulo State has raised its capital from 230,000,000 cr. to 330,000,000 cr., and accepted a loan of US $7,000,000 from a French banking interest. Indústria Siderúrgica Nossa Senhora Aparecida, Sorocaba, which now produces 24,000 tons of steel, has signed an agreement with a French company under which it will receive technical aid.

The company plans to raise its capital, at present standing at 200,000,000 cr.

An agreement has been signed between the Brazilian Development Bank and the Material Ferroviário S.A. concern for the financing of a forge with an annual capacity of 30,000 tons to be installed at Caçapava, near São Paulo.

Some US $6,000,000 will be saved annually by the operation of this unit, the cost of which will be some 435,000,000 cr.

Finally, the Açosul concern, founded in Rio Grande do Sul last year and in which the Portuguese concern, R. Ramada, is financially interested, is planning to open iron smelting plant and steelworks in Recife and Pernambuco. Equipment for the installations is believed already to have been purchased from West Germany.

# Unauthorized Sales of Miners' Coal

SUBSTANTIAL increase in the quantity of free coal sold by workmen to unauthorized and unregistered private traders who are reselling such coal at a handsome and unfair profit. This is the subject of a statement which has been issued by Mr. N. F. Nattrass, industrial relations director of the Durham Divisional Coal Board, and Mr. Sam Watson, general secretary of the Durham Area of the NUM. The statement deprecates the practice as "detrimental to the trade of authorized and registered coal traders in the division, with the result that the board suffers a serious restriction in the disposal of commercial grades of household coal at agreed prices."

Workers are reminded that the coal allowances are not transferable except by the terms of some local and county agreements recognized by the board and the union for retired and redundant persons over 65 years of age and widows. Any part of the allowance not taken may be surrendered to the NCB at the agreed price.

It is pointed out that in the present state of the industry and in the interests of continuity of employment of miners the NCB should sell the maximum possible tonnage at commercial prices and sales of miners' coal to unauthorized traders at low prices reduce the board's sales to a considerable extent. In the struggle to maintain the markets for coal against other forms of heating, particularly oil, it is imperative that householders are given the best possible services.

All officials and workmen are asked to carry out the spirit of the Firecoal Agreement and that all private sales of coal to unauthorized persons should cease forthwith.

Commenting on the statement, Mr. Fisher Thompson, speaking for the Durham County Coal Merchants' Association, said: "We have complained many times to the board. It is impossible to estimate the tonnage involved, but it is formidable. We want to see everything possible done to cut down these bad dealings in the interests of consumers as well as of the coal trade. Unauthorized dealers give no service in the way of advising about fuel or replacing any that is unsatisfactory. If, as sometimes happens, the person who buys from the unauthorized man gets short weight, he has no redress. The unauthorized trader often calls on a miner as soon as his coal is delivered and makes him an offer for the lot. Sometimes the miner deals directly with his own customers."

## . . . *and a Prosperous New Year*

IN his Christmas message to the 90,000 miners in the South-Western Division of the National Coal Board, the chairman, Mr. D. M. Rees, expresses confidence in the Division's future and looks forward to growing prosperity in 1960. As the Division's new pits came into production in the forthcoming year results would continue to improve and compare favourably with other coalfields, he stated.

The past year had been a testing period for the Division and it was therefore gratifying to know that by the end of the year operating costs had fallen and productivity had improved. These results had been achieved in spite of marketing difficulties and the necessity for heavy stocking in the early part of the year.

# NUM Delegates Refused to Meet Mr. J. C. George

REPRESENTATIVES of the three miners' unions—the NUM, the National Association of Colliery Overmen, Deputies, and Shotfirers, and the Clerical and Administrative Workers' Union—were invited to meet Mr. John C. George, Parliamentary Secretary to the Ministry of Power, when he paid a two-hour visit to Michael Colliery, East Wemyss, Scotland's largest and deepest pit, last week, as part of a fact-finding mission he undertook during the Christmas vacation. The NUM delegates, Mr. Max Meharra and Mr. Harry Peaker, declined to co-operate because they were refused half an hour with Mr. George to question him on redundancies and pit closures.

Claiming that their request had been turned down by Mr. T. D. M. Scrimgeour, Area general manager of the East Fife Area, Scottish Divisional Coal Board, Mr. Meharra said: "As Mr. George is one of the major policy-makers, we asked for time to discuss with him issues affecting miners and their families. The board said there was no time for discussion. We said we were elected to fight for better wages and conditions and if we were refused discussion it would be pointless to meet him."

The colliery branch of the NUM also alleged that the colliery was given "spit and polish" treatment for Mr. George's visit. Great activity during the previous week had included washing down pithead notice boards, spraying walls, roofs, and pitprops with whitewash underground, and laying tons of stone chips to make easier Mr. George's walks underground.

Mr. Scrimgeour's reply was: "What would be the point of spit and polish when Mr. George is a former miner and would see through it all. Of course, we cleaned the place up a bit, but when you have visitors coming to your house you don't leave the washing lying about."

Mr. George went to Michael Colliery because of the recent substantial improvement in production there. Its 2,800 miners have stepped-up output by over 50 per cent. to over 15,000 tons a week and it is still rising. Mr. George said: "I want to see how they have been doing it."

The previous day Mr. George had toured Kinneil Colliery, one of Scotland's most modern pits. Scotland's only hope so far as coal mining was concerned was for the big and newly-developed collieries to make up for the less fortunate ones, he said.

# Sutton Colliery Electrician Killed

OPEN verdict on Mr. Clarence Reginald Tucker (53), an electrician at Sutton Colliery, Mansfield (Notts), was recorded by the Mansfield coroner, Mr. C. A. Mack, last week. It was stated that Mr. Tucker and another worker had arranged for the power to be turned off before fitting a new switch underground. It was switched on again almost immediately by a deputy who saw that the conveyors had stopped and thought he had pulled the wrong lever. Mr. Tucker was disconnecting the switch when he was electrocuted.

The coroner said that, although the deputy was wrong in switching on the power again, he had acted innocently without realizing the consequences. Mr. Tucker was equally at fault in assuming the power was off because the conveyors had stopped. He should have checked first.

*Personal*

# Reorganization at BISRA

FOR many years information officer of the British Iron and Steel Research Association, Miss I. M. SLADE has relinquished the post to take on consulting duties in the association's operational research department at the Battersea laboratories. She will be closely connected with ergonomic studies, particularly in connection with problems involving safety and protective clothing, a field in which she has for long been an authority.

Following Miss Slade's move, the distribution of information, the handling of inquiries, and the development and exploitation of the results of research, all of which are related, have been combined into a single unit—development and information services—with Mr. L. W. STEVENS-WILSON as head. Mr. Stevens-Wilson was formerly head of the development and steel user section. Before joining BISRA in 1956 he helped to run S.W. Developments, Limited, a company of his own foundation which specializes in industrial property and patent development and consultation on patent and trade mark affairs.

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Mr. JOHN HARRISON, training officer at Mosley Common No. 4 Colliery, Atherton (Lancs), for the past six years, has retired.

Capt. JAMES W. COCKERILL, sales manager of R. Hood, Haggie & Son, Limited, rope manufacturers, of Wallsend, has retired after 40 years with the firm.

Mr. ROBERT A. ALMOND has been taken into partnership with Philipp & Lion, dealers in scrap metal and non-ferrous residue and by-products, of London, E.C.2.

Mr. JOHN BONAR MACCOLL, information officer and publicity manager since 1945 of the Dunlop Rubber Company, Limited, has retired after 32 years' service.

Mr. J. O. TAUDEVIN, chairman and managing director of John M. Moorwood, Limited, Sheffield, has been elected chairman of The Roll Makers Association of Great Britain.

Mr. H. COOPER, manager of the sheep shear department of Ward & Payne, Limited, Sheffield, was presented with a gold watch by Mr. A. Mattersley, chairman of the company, to mark his retirement.

Mr. WILLIAM EVANS, who is 69, relinquished his title of longest-serving employee at the Imperial Steel Works, Sheffield, of Edgar Allen & Company, Limited, this week. He has retired after 56 years with the firm, recently as salvage officer.

West Germany's member of the High Authority of the European Coal and Steel Community, Dr. HEINZ POTTHOFF, has been presented with one of his country's highest civil awards—the Federal German Order of Merit with star and epaulette.

Mr. W. WATSON, personnel manager of the Hebburn-on-Tyne shiprepairing yard of Vickers-Armstrongs (Shipbuilders), Limited, has retired after 52 years' service. Before being appointed personnel manager 14 years ago he served for many years as head timekeeper.

Dr. ARNOLD GREEN, director of the British Ceramic Research Association Centre, Stoke-on-Trent, has retired after 40 years with the association, 25 of them as director of research. He may continue to serve the association in an advisory capacity. Dr. Green is 66.

By the end of next year, Mr. ALFRED H. BRADDOCK, of South Bank, Middlesbrough, who has been re-elected to the national executive of the Iron and Steel Trades Confederation, will have completed 21 years' continuous service on the executive. This is a feat never achieved before in England or Scotland.

Gold watches for 25 years' service with Hall & Pickles, Limited, steel, tool, and wire makers, of Sheffield, were presented last week by the managing director, Mr. J. H. Russell, to the 51-year-old works director, Mr. A. M. C. MURPHY, and Mr. ERIC MAXWELL GIDNEY (42), assistant melting shop manager.

Mr. RICHARD HOLMES has retired as erection superintendent of Alex. Findlay & Company, Limited, structural engineers, etc., of Motherwell (Lanarkshire), after 24 years with the company. He was appointed erection superintendent just before the war and had previously been with Redpath Brown & Company, Limited, Edinburgh, as erection foreman.

Mr. Geoffrey Marples, managing director of Marples & Sons, Limited, tool manufacturers, of Sheffield, presented a gold watch to Mr. BERNARD MARSHALL, manager of the firm's associated company, Turner, Naylor & Company, Limited, also of Sheffield, to mark his retirement earlier last year, after 50 years' service, at the annual dinner of the firm on Tuesday of last week.

Mr. A. L. DRYER, joint secretary with Mr. H. A. Warren of both Power Securities Corporation, Limited, London, E.C.4, and Balfour, Beatty & Company, Limited, electrical, mechanical, and civil engineering contractors, of London, E.C.4, has retired after 50 years' service with the Balfour, Beatty organization. Mr. H. A. WARREN has been appointed secretary of both companies.

One of 26 long-serving members of Edward Pryor & Son, Limited, steel-marking device engineers, of Sheffield, to receive gold watches at a pre-Christmas dinner were the managing director, Mr. G. RONALD PRYOR, who has been with the firm since 1919, and his wife, Mrs. G. S. PRYOR, who is a director. The presentations were made at the inauguration of the firm's E.P. 21 Club, for men and women completing 21 years' service with the firm.

Mr. J. E. RICHARDSON, manager of Cleworth Hall Colliery, Tyldesley (Lancs), for the past 20 years, retired at the end of 1959. He started work with the Blainscough Colliery Company, Limited, with which his father was manager, and later moved to Bold Colliery, near St. Helens, which he managed for 19 years before moving to Cleworth. His successor is Mr. RICHARD CROMPTON, who was manager of Ashton Moss Colliery, Ashton-under-Lyne, until it closed recently.

Managing director of a new company formed in the west of Scotland to manufacture gas-detecting instruments and alarms to certified and approved designs is Mr. ALEXANDER N. WILLIS, who was, until recently, chief development engineer (instruments) of the Mine Safety Appliances Company, Limited, Glasgow. The new company, Willis Instruments, Limited, will also provide 24-hour servicing and maintenance facilities for all types of electrical and electronic scientific instruments. Negotiations are in progress with several British manufacturers on the establishment of a service centre at Busby (Lanarkshire).

A well-known member of the staff of John Readhead & Sons, Limited, the South Shields shipbuilders and boilermakers, etc., Mr. JOSEPH H. CASS, retired yesterday (Thursday) after having been with the firm for 61 years and nine months. He is 77. To mark his retirement Mr. Cass has been presented with a wallet of Treasury notes by Mr. G. H. Towers, chairman and managing director, and with a fireside chair and electric radiator by Mr. W. P. Heckels, a director and shipyard

manager, on behalf of foremen and staff. In recent years Mr. Cass has been engaged on buying of timber on which he is an expert. He was previously head foreman shipwright.

Mr. B. H. SENIOR, production director of Arthur Balfour & Company, Limited, makers of high-speed alloy tool and carbon steels, of Sheffield, made a presentation to 71-year-old Mr. CHARLES HUNT, who has retired after 52 years with the firm. Mr. Hunt has been a foreman in the company's inspections department since 1915. Until 10 years ago his wife worked there; his elder son, Charles, has been with Balfour's for 26 years, and his younger son Frank was with the firm for 12 years.

Presentation for 25 years' active service is not unusual—except in the case of Mr. W. W. HACKETT, who, at 85, has been presented with a silver watch by the chairman and directors of Tube Investments, Limited, to mark 25 years' active service for TI during his 25 years' retirement. Mr. Hackett retired as joint managing director of Accles & Pollock, Limited, at the age of 60, 25 years ago and since then he has worked and travelled for the company. Mr. Hackett was made CBE for his work during the war on the Sten gun barrel.

Mr. ERNEST KNIGHT, a director and general manager of Alex. Hall & Company, Limited, shipbuilders, etc., of Aberdeen, has retired after 50 years in the industry. A native of Plymouth, he joined the industry at Devonport Dockyard in 1909 as an apprentice shipwright and later became a draughtsman. In 1919 he moved to the Caledon Shipbuilding & Engineering Company, Limited, Dundee, as an estimator and served there until 1955. A year later he became general manager and a director of A. Hall & Company, an associate company.

## Qualified Optimism for British Shipbuilding

UNCERTAIN year for British shipbuilding in which the tonnage of existing contracts cancelled was outstripping that placed as new orders, has closed on a rather more cheerful note, states Col. T. Eustace Smith, president of the Shipbuilding Conference, in an end-of-the-year message on the state of the industry. The fact that a number of the important orders announced in December were for ships for oversea owners was an encouraging indication of British competitive strength.

Enterprise of UK shipbuilders in bringing their yards to a high state of efficiency had been demonstrated recently in some outstanding building times, but it should not be overlooked that the firms concerned had submitted keen prices to keep their yards in production and to maintain employment. Allied with genuine and farsighted co-operation on the part of labour, British shipbuilding could hold its ground in the face of intense international competition.

The industry entered 1960, Col. Smith states, with an order-book of more than 4,000,000 tons gross, but orders were not evenly distributed and there was still the possibility of more cancellations and deferments. Problems to be solved included surplus shipbuilding capacity, the large amount of idle tonnage, and the continued depressed state of the freight markets. The challenge of the future could only be met by the offer of ships of the finest quality and performance at the lowest possible prices with attractive delivery dates.

*Non-ferrous Metals*

## Copper Disputes Still Affect Market

AT almost regular intervals news is received of agreements reached between the Mine, Mill and Smelters' Union and American copper producers, but production at the mines is still held up. There are still, apparently, complications in the way of a general resumption of output and until this is achieved markets tend to be cautious. In London, however, the market is firm, with cash metal still commanding around £15 a ton over the three months' price. Much of the prevailing firmness may be attributed to the fact that when the US custom smelters returned to the New York market recently their quoted price was raised by 2 cents to 35 cents a pound. The producers' price is still quoted at 33 cents a pound.

The position is far from clear and so far has been made more involved as the US copper strike wends its involved way towards what is hoped will be an early, satisfactory, and lasting settlement. For the time being it is the dominant factor in the high price quoted in London.

The market suffered from another bullish factor with the news that rockbreakers at Mufulira, on the Rhodesian Copperbelt, had imposed a ban on overtime. But that ban has been lifted. Given another seven days, the outlook should be considerably clearer and it will be interesting to see how the markets react following the settlement of the dispute in America.

In New York the price of tin is less than 99 cents a pound and both there, in London, and in Singapore the market has been far from steady. Demand on both sides of the Atlantic is spasmodic and generally lethargic and in London stocks are rising. At the end of last week stocks of refined tin in LME warehouses rose 193 tons to 8,527 tons.

Turnover in London for lead is sufficiently brisk to hark back to the satisfactory position of early November. Cash metal in London is now in the region of £74 a ton and in New York the spot price is more or less firm at 12 cents a pound. New York offers a better market for zinc than London and the Board of Trade offer to dispose of 3,000 tons from its stockpile depressed both the cash and three months' quotation. Prompt material, however, is relatively scarce, resulting in a backwardation of some £5 a ton.

Official metal prices in London yesterday (Thursday) were:—COPPER, Standard: Prompt £255, forward £240. TIN, Standard: Prompt £785, forward £782 10s. LEAD: Prompt £73 15s., forward £73 5s. ZINC: Prompt £94 15s., forward £90.

## European Steel Output Will Beat Record

CRUDE steel output in the European Coal and Steel Community in 1959 is believed to have reached an all-time peak at about 63,000,000 tons. According to official estimates the year's production will exceed that of 1958 by 5,000,000 tons (8.6 per cent.) and the previous record set up in 1957 by 3.200,000 tons (5.3 per cent.).

West Germany's output for the second week in December shows that the rise is maintained. Pig-iron output was 260,700 tons, compared with 252,400 tons the previous week and 202,000 tons in the corresponding week in 1958; raw steel, 328,100 (318,000 and 258,700) tons; rolled steel finished products, 152,400 (149,900 and 122,200) tons.

**MR. R. F. SUMMERS,**

*President of the British Iron and Steel Federation*

## MR. R. F. SUMMERS

PRESIDENT of the British Iron and Steel Federation for 1960—the federation's silver jubilee year—Mr. Richard Felix Summers was born at Stalybridge (Cheshire) in December, 1902. Son of the late Henry Hall Summers and grandson of the late John Summers, founder of John Summers & Sons, Limited, Hawarden Bridge Steelworks, Shotton (Cheshire), he was educated at Shrewsbury and Clare College, Cambridge. He entered the family business in 1925, was made a director in 1931, managing director in 1936, and chairman in 1938.

Of Mr. Summers's four sons, two are at present employed by John Summers & Sons, one is training for the steel industry, and one is at Cambridge.

Mr. Summers is also a director of the United Steel Companies, Limited, and the Steetley Company, Limited, and of the District Bank and the Royal and Liverpool & London & Globe insurance companies. He is a member of the council of the Iron and Steel Institute, a governor of Shrewsbury School, and a member of the Institute of Transport and the Midland Area Board of the British Transport Commission.

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# "COAL IS FIGHTING BACK"

*Says*

## SIR JAMES BOWMAN

Chairman of the National Coal Board

### IN A NEW YEAR MESSAGE TO "IRON AND COAL"

AS I look back on 1959, I recall, as we all do, the long and glorious summer—but with mixed feelings! It certainly added to our difficulties, and was at least in some measure the cause of our having to carry heavy stocks of coal.

In my New Year message last year, I said that our whole efforts must be directed towards improving our competitive efficiency. We did just that, and we have achieved a remarkable increase in efficiency during 1959. In the closing weeks of the year, right up to Christmas, we set new records for face and overall o.m.s. week by week. On the average over the year, we are 5 per cent. better than 1958, which was itself a record year.

In 1960, we are cutting production so that it will not exceed demand. At the same time, we have our eyes on the future. "Revised Plan for Coal" is the chart of our course. Coal is fighting back. Our strengthened technical sales service is in action, demonstrating that coal is still the fuel of the future, capable of beating oil on price and efficiency in the great majority of cases.

In wishing the readers of this journal a happy and prosperous New Year, I would like to remind them once again that their prosperity and ours are closely linked. If they flourish, so shall we.

## Calendars, etc., Received

ON receiving the following calendars, etc., for 1960, we wish to convey our thanks, and to extend our best wishes for the New Year to the senders.

CHURCHILL MACHINE TOOL COMPANY, LIMITED, Broadheath, nr. Manchester—Christmas card.

BECORIT (GB), LIMITED, Nottingham—Calendar surmounted by coloured illustration of a country scene.

BAXTER FELL & COMPANY, LIMITED, Ibex House, Minories, London, E.C.3—Weekly desk diary, spirally bound in a book cover, containing scenic illustrations.

WESTFALIA LUNEN, Wethmar, Post Lünen, Germany—Wall calendar bearing coloured illustrations of activities of past centuries.

JOHN LAING & SON, LIMITED, London, N.W.7—Large wall calendar, with six beautiful coloured illustrations of oil paintings by contemporary landscape artists.

CROFTS (ENGINEERS), LIMITED, Bradford (Yorks)—Monthly wall calendar showing some of the firm's products.

RICHARD SUTCLIFFE, LIMITED, Horbury, Wakefield—Wall calendar surmounted by photographic reproduction of Burnsall (Yorks).

ANDERSON, BOYES & COMPANY, LIMITED, Motherwell, Scotland—Wall calendar with 12 coloured photographic reproductions of Scottish beauty spots.

## FORTHCOMING EVENTS

JANUARY 6

*Newcomen Society:* Meeting at the Science Museum, London, S.W.7, at 5.30 p.m.: "Coalbrookdale Group, Horsehay Works—Part 2," by R. A. Mutt.

JANUARY 7

*Midland Institute of Mining Engineers:* Meeting at the Royal Victoria, Sheffield: "Layering of Firedamp in Longwall Workings," by E. J. Raine.

*Manchester Geological and Mining Society:* Meeting at the Wigan and District Mining and Technical College, at 4 p.m.: "Stratigraphy of Bradford Colliery," by D. Magraw.

JANUARY 8

*Normanton, Castleford and District Mining Society:* Meeting at the Whitwood Technical College, Castleford, at 7 p.m.: "Mine Ventilation," by F. Jones.

### National Association of Colliery Managers

JANUARY 12

*Yorkshire Branch:* Meeting in the Miners' Welfare Hall, Brodsworth, at 3 p.m.: "Methane Drainage," by I. H. Morris.

JANUARY 15

*Yorkshire Branch:* Dinner/dance at the Danum Hotel, Doncaster.

JANUARY 18

*Midland Branch:* Meeting at the Denman's Head, Sutton-in-Ashfield, at 6.30 p.m. Paper by S. Vardy.

JANUARY 27

*Lancashire Branch:* Meeting at the offices of the North-Western Divisional Board, Portland Street, Manchester, at 4 p.m.: "Tunnelling during the Last Ten Years in the N.W. Division," by W. M. Linkletter.

JANUARY 29

*Kent Branch:* Annual general meeting at the Swan Hotel, Deal, at 7.15 p.m.

# New Year Greetings from the Minister of Power

*The Right Hon. Richard Wood, M.P.*

MR. RICHARD WOOD, M.P.

**I AM grateful for the opportunity of sending my best wishes for 1960 to the many readers of "The Iron and Coal Trades Review" who belong to the great basic industries with which I am associated as Minister of Power.**

**No one in these industries—in coal mining or in iron and steel—expects life to be easy; it never has been in all their history. It would not be doing them any good service to pretend that the future holds no problems and no difficulties.**

**But I am sure that with courage, readiness to accept change and to make the most of technical advances, these difficulties can be overcome. In this firm belief I wish the members of these industries all success as the New Year begins.**

## German Tin Conference

THE technological and economic development of the German tinplate industry was praised by Dr. W. E. HOARE, assistant director of the Tin Research Institute, Greenford (Middx), at the sixth annual German tin conference at Düsseldorf on December 3.

In his opening lecture to the conference, organized by the Zinn-Informationsburo, Düsseldorf, in conjunction with the Tin Research Institute, Dr. Hoare referred to a number of notable German tinplate plants and said they were operating with commendable success. His paper dealt with the electro-deposition process in the manufacture of tinplate.

Among other speakers was Mr. S. C. BRITTON, head of the electro-chemistry and corrosion department at the Tin Research Institute, who gave a progress report on a process for the electro-deposition of bright tin, developed by the institute two years ago and now in commercial use.

Chairman at the conference was Prof. Dr. E. RAUB, director of the Forschungsinstitut fur Edelmetalle und Metallchemie at Schwabisch Gmünd.

### New Spring Alloy

Developed by Samuel Fox & Company, Limited, a subsidiary of the United Steel Companies, Limited, is a new stainless alloy specifically for the manufacture of watch and instrument springs. Known as "Fortinox," the new alloy is already being used in the large-scale production of stainless unbreakable mainsprings for watches and precision instruments at the company's Stocksbridge works, near Sheffield.

## World's Largest Mine Hoist

WHAT is claimed to be the world's largest mine hoist is being delivered shortly by Asea to the Soviet Union, according to the Swedish company's house organ. It is intended for a double-hoist system with a loading capacity of 50 ton/skip, and forms part of a delivery of nine hoisting units, one other being of the same size.

The hoist drum weighs 49 tons and its two skips weigh 40 tons each. For lifting the drum out of the construction hall it was necessary to build new traversing gear. In spite of the heavy capacity of the pulley unit its diameter is only 14 ft. The driving speed is 33 ft./sec. at a depth of 3,000 ft. The motor is of 9,000 h.p., derived from four separate units which are connected to the driving wheels by means of two double-reduction precision gears. The mechanical equipment, however, is designed for an ultimate depth of 4,300 ft., which will mean an increase in the driving speed to 46 ft./sec. at a simultaneous increase in the motor output to 12,000 h.p.

Delivery of the hoists, which are wholly automatic, includes Asea-made skips, measuring pockets, and underground transportation equipment for conveyance of the ore from the crushing stations. The latter are to be operated by an Asea automatic hopper system, co-ordinated with the automatic hoisting equipment.

## *Koronamax Precipitator Discharge Electrodes*

IN connection with a recent contract awarded to Koppers Company, Incorporated, for electrostatic precipitators to handle 1,178,000 cub. ft./min. of open-hearth gases for Jones & Laughlin, Pittsburgh, and 584,000 cub. ft./min. for Cornigliano S.p.A., near Genoa, the first such installation in Europe, W. C. Holmes & Company, Limited, Turnbridge, Huddersfield, points out that the "Koronamax" discharge electrodes to be employed were originally developed by this firm's Gas Cleaning Division and were first used in Holmes-Elex electrical precipitators in 1954.

These electrodes met with great success when they were used for the first time in open-hearth furnace precipitators at the Fairless Works of United Steel Corporation. This installation, claimed to be the largest in the world, includes 18 Koppers precipitators. It went into service when the nine open-hearth furnaces started up in 1953.

It was these units which, when production increases considerably beyond initial specifications were scheduled in 1957, were given a stepped-up capacity by installation of "Koronamax" electrodes and are now meeting original dust-removal guarantees although handling 50 per cent. greater loads than for which they were initially designed

### Costing for Light Springs

In the belief that there are many manufacturers of light springs who would welcome guidance on simple methods of costing, the Light Spring Association appointed a committee of accountants to make recommendations. The result of the committee's work has now been published as a booklet entitled "Simple Costing for Light Springs" outlining a practical approach to costing which should prove particularly useful to the small manufacturer. Copies of the booklet may be obtained from the secretaries of the Association, 301, Glossop Road, Sheffield, at 2s. 6d. each, post free.

# LARGE COAL FROM THIN SEAMS

## *Problems of Mechanized Production*

By L. J. MILLS, B.Sc., M.I.Min.E.*

*Reserves of coal from thicker seams are becoming steadily exhausted and to maintain production increasing attention will have to be directed towards working seams under 3 ft. in thickness. The factors affecting the application of thin seam mechanization, with particular reference to No. 7 Area, East Midlands Division, NCB, are discussed in this paper presented to the South Midland Branch of the National Association of Colliery Managers on March 9, 1959.*

THE average thickness of seams worked in 1958 in No. 7 Area, East Midlands Division, National Coal Board, was 4 ft. 10 in. but the reserves of thicker seams are steadily being exhausted and the maintenance of production will increasingly depend on seams 3 ft. or less in thickness. Table 1 shows approximate figures of the percentage of coal by seam thickness to be produced in this Area at the present time, in the year 1963, and in 1968.

It will be seen that in 1963, 21 per cent. of the output is expected to be produced from seams within the range of 3 ft. 6 in. to 2 ft. 6 in. There is also some slight increase in the output to be obtained from seams of the size range of 2 ft. 6 in. to 2 ft. In 1968 there is a further small rise in these figures to just over 22 per cent. from seams in the 3-ft. 6-in. to 2-ft. 6-in. range and nearly 2 per cent. from seams of a thickness of 2 ft. 6 in. to 2 ft. To maintain the current high standard of productivity in the Area it is necessary to give thought now to the pattern of mining to be adopted for these thinner seams and to embark on experimentation to meet the problem.

### FACTORS AFFECTING SEAM MECHANIZATION

Before considering the type of machine to be employed it is necessary, in determining the ultimate pattern of mining, to take into account a number of factors.

To achieve a nominal output of 2,000 tons from a colliery with a 4-ft. 6-in. seam working the faces with a 4-ft. 6-in. turnover, a total of 870 yd. of faceroom is required. With only a 3-ft. seam and the same 4-ft. 6-in. turnover, the faceroom has to be increased to 1,300 yd. Such an increase calls for extra capital expenditure for additional face equipment and gate conveyors and also requires the provision and maintenance of an increased length of roadways at any given time.

### Face Room and Rate of Advance per Day

In computing the above face lengths, no account has been taken of the provision of adequate spare faceroom and equipment to guard against breakdown and unforeseen geological difficulties.

It can be shown for a nominal 2,000 ton/day pit working a 3-ft. seam that, by increasing the rate of advance of each face from 3 ft. to 5 ft./day, a saving of 800 yd. of faceroom is achieved. However, the same increase in the rate of advance of a face from 10 to 12 ft./day only reduces the necessary faceroom required by 100 yd. It will be seen, therefore, that the saving in faceroom for a given nominal output decreases for the same incremental advance of the face as the overall rate of advance increases, and there appears to be an optimum limit to the extent to which concentration of working on any given face can be carried out by increasing the rate of advance.

Present indications are that the practical limit of depth of advance giving a good degree of concentration lies in the region of 8 to 9 ft./day which, for a nominal 2,000-ton/day colliery working a 3-ft. seam, would call for 650 yd. of faceroom.

* Deputy Production Manager (Operations), No. 7 Area, East Midlands Division, National Coal Board.

TABLE 1.—*Present and Projected Trend of Area Output by Seam Thickness.*

| Seam thickness. | Present. | | 1963. | | 1968. | |
|---|---|---|---|---|---|---|
| | Quantity. | Per cent. output. | Quantity. | Per cent. output. | Quantity. | Per cent. output. |
| Over 3 ft. 6 in. .. .. .. | 6,634,880 | 96.58 | 6,028,080 | 77.56 | 5,685,800 | 75.97 |
| 3 ft. 6 in. to 3 ft. .. .. | 112,000 | 1.64 | 1,453,500 | 18.70 | 1,554,000 | 20.77 |
| 3 ft. to 2 ft. 6 in. .. .. | 61,000 | 0.88 | 196,800 | 2.54 | 105,000 | 1.41 |
| 2 ft. 6 in. to 2 ft. .. .. | 62,000 | 0.90 | 94,000 | 1.20 | 138,500 | 1.85 |

Every endeavour should be made to work faces to achieve, if necessary by two-shift working, an advance of the order of 9 ft./day thereby providing a high bulk output from the minimum number of faces.

### Length of Face

In the past, the length of face established in a pit, apart from considerations of faulting, has often been a matter of custom or accepted practice. Clearly, to reduce the amount of non-productive work it is desirable to achieve a maximum length of face for a given number of roadways.

In some coalfields with conventional working it has been customary not to exceed much more than 130 yd. between gates in a 3-ft. seam in order to provide "escape" roads at frequent intervals. Wherever possible, it is suggested that a figure approaching 200 to 225 yd. should be the aim, and if additional roads are considered necessary for safety, then a 250-yd. face with three roads is more desirable than the working of two single-unit faces, each of 125 yd. in length.

The type of machine used also has some influence on the length of face. Where the method of working is based on the rapid thin-slice extraction principle, the length of face is usually determined by considerations other than those relating to machine performance, but with a wide buttock machine it is desirable that the length of face should be determined by the capacity of the machine to traverse the face once per shift.

### Conveyors, Communications and Supervision

Greater face lengths, particularly in thin seams, introduce difficulties in respect of conveying, communications and supervision. Bottom-loading belts have obvious limitations in regard to the length on which they can operate satisfactorily, and armoured conveyors appear to be the obvious choice for the greater face lengths envisaged. Already, there are available armoured conveyors having a pan height of 5 in., employing special steel alloy chain and flame hardened structure, where the drive units have been designed with the object of reducing the overall height to a minimum. For example, the Crawley Lo-Hite conveyor is provided with a 40-h.p. drive unit at an overall height of 19½ in. As with the larger armoured conveyors, additional motors can be added to the head or tail ends of the conveyor to deal with increased loading due to length or gradient.

Supervision and communication in a thin seam can be a very real problem due to the reduced mobility of manpower on the face, and assistance is required, not only by the installation of an efficient signalling system, but by the provision of face telephones which, as a minimum, should be installed at intervals of not less than 50 yd. Recently, the NCB's Mining Research Establishment has produced a prototype loud-speaking coal-face telephone which has already undergone extensive trials at a colliery in the East Midlands Division. The first improved production sets are now being manufactured and one installation is being made in connection with 220-yd. Anbauhobel face at Granville Colliery, in a seam 2 ft. 6 in. thick. Siting of the loud-speaking telephones along the face can be as close as 10-yd. intervals.

### Ripping and Stable Holes

The proportion of men employed on conventional ripping in thin seams would be greater, the volume of dirt to be stowed would be larger, and assuming all ripping material is to be retained at the face, then in the thinner seam a much greater length of gate-side pack has to be built. With an increased rate of advance of, say, 9 ft./day, mechanization of the rippings requires to be considered. It is also necessary to ensure that there is adequate clearance over the conveyor drive heads to give a proper delivery from the face conveyor. This suggests, in many instances, that the gate road should be driven in advance of the face and the system of mechanization adopted for the rippings should be suitable for these circumstances. At the present time two methods, slusher packing and pneumatic stowing, are in use.

The application of slusher packing is widely known. The dirt from the combined roof and floor extraction of an advanced roadway can be elevated by means of a short conveyor on to a bridge fixed at the floor level of the seam and from this bridge the dirt can be slushed into the pack hole by means of the normal slusher bucket hauled by a double-drum epicyclic gear scraper hoist which is situated near to the face ripping, deflection of the ropes from the hoist being achieved by suitably mounted sheaves in the bridge structure.

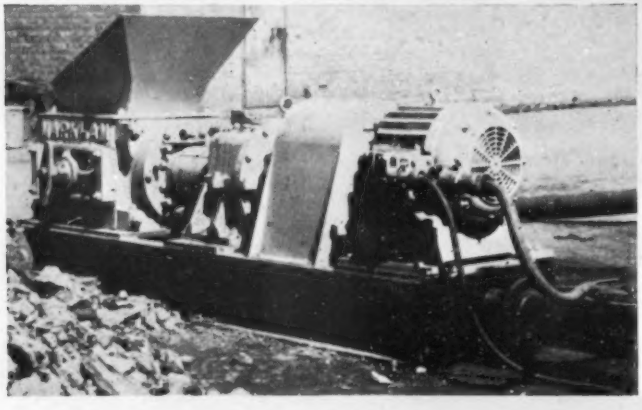

FIG. 1.—MARKHAM CRUSHER STOWER.

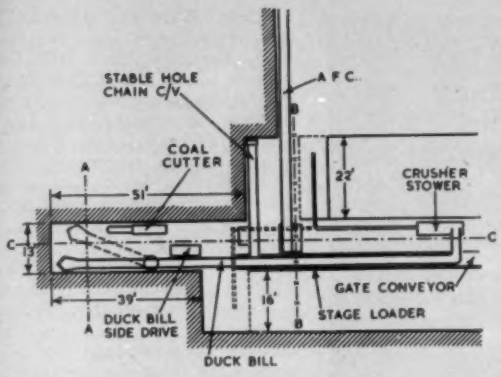


FIG. 2.—PLAN LAYOUT OF A HEADING IN ADVANCE OF THE FACE, USING A DUCKBILL LOADER.

A more recent development involves the use of the Markham crusher stower (Fig. 1). Basically this machine is similar to that used in normal pneumatic stowing, being equipped with a 15-h.p. drive, but the gears, bearings, paddles and linings have all been strengthened so that the machine will crush ripping debris to a size suitable for stowing, which is normally below 2½-in. The facility of crushing ripping dirt and pneumatically stowing it at the same time is thereby incorporated in one machine.

The throughput of the machine has been established by underground trials as being of the order of 15 ton/hr. through 70 to 80 yd. of 6-in. dia. pipe, including one 90-deg. bend. In its present form it will accept stone of medium strength up to 15 in. by 10 in. by 5 in. in size, but obviously the machine will have greater difficulty in dealing with very hard sandstone.

Supply of compressed air to the crusher stower may be from the colliery compressed-air system through a special control valve designed to give a flow of air to the machine at the correct pressure and quantity. Where a supply is non-existent or inadequate, a compressed-air blower may be used, of which the Rootes-type blower is an example. This is a portable unit which, like the crusher stower, weighs about 3 tons, and can be readily mounted on wheels or skids as required. The blower has a capacity of 2,000 cub. ft./min. and the release valve can be set to operate at 7 lb./sq. in. with a motor drive of 60 h.p.

Both methods of gate-side packing call for considerable attention to the shotfiring of the lips to provide adequate fragmentation in quantities which can be handled by the machine.

Fig. 2 illustrates a method of using a duckbill loader for driving the advanced roadway, the dirt being conveyed by means of a stage loader to the crusher stower which is situated in the gate outbye of the face. The crusher stower can be sited in the advanced heading itself which has the advantage of eliminating the stage loader, reduces congestion within the roadhead and allows the dirt to be blown directly into the pack hole from within the advanced heading itself.

Stable holes also require special attention and adequate provision must be made to ensure that the stable hole itself keeps in step with the face advance. Where the seams are suitable for water infusion, the method of pulsed-infusion shotfiring provides a convenient form of coal preparation in the stable holes without the provision of costly capital equipment such as a coal-cutter, the very bulk of which in a thin seam can be a considerable embarrassment.

Often, natural conditions are better in thin seams than in thick. Nevertheless, it is suggested that, wherever possible, caving should be employed rather than strip-packing in order to reduce manpower and to keep pace with the advance of the power-loading machine. Care must, however, be exercised to ensure that the system of support provides a good breaking-off line at the waste-edge, particularly where the floor has a low bearing capacity.

The use of self-advancing hydraulic chock installations, such as the Dowty Roofmaster, the Seaman-Gullick and the Desford chocks, appear to be admirably suited to meet these conditions, particularly in conjunction with a machine working on the thin-slice principle of extraction, where the movement of roof supports is taking place in small increments, and the operation of support setting keeps pace with the speed of the machine. Installations of Seaman-Gullick chocks and Dowty Roofmasters have been made in seams approximately 3 ft. thick, and at Granville Colliery self-advancing Desford chocks with double-acting Gullick rams are being installed in conjunction with the Anbauhobel installation in the Little Kilburn seam. These chocks, illustrated in Fig. 3, have an overall minimum height of 2 ft. and an extension of 9 in.

Where the system of support envisaged does not

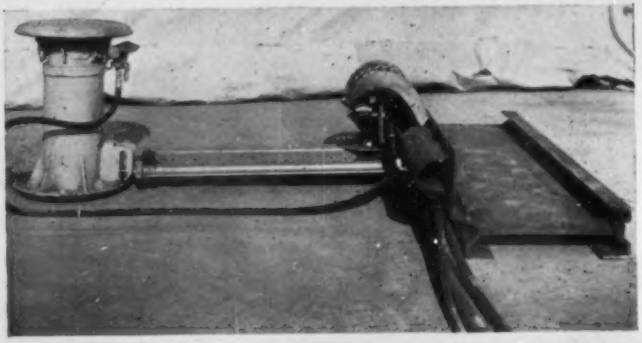

FIG. 3.—THIN-SEAM DESFORD CHOCK AND GULLICK RAM.

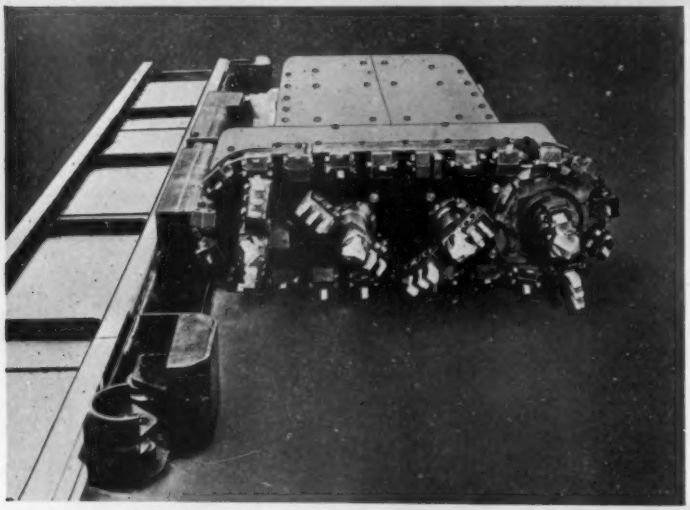

FIG. 4.—MIDGET MINER WITH ORIGINAL CUTTING HEAD AND LONG GUIDE BAR.

eliminate the setting of props and bars, the former should be capable of being quickly set with a high initial setting load and be sufficiently light to be easily handled on the face. The friction-type prop possesses a greater length variation in the 20-in. to 30-in. range as compared with the normal types of hydraulic prop and, therefore, has an advantage in thinner seams.

## CHOICE OF POWER-LOADING MACHINES

In selecting the type of mechanized coal-getting and loading machine it is necessary to bear in mind not only the pattern of mining but also the requirements of the market, which demands the production of the maximum amount of large coal coupled with the minimum percentage of $-\frac{1}{2}$ in. and, in particular, of the proportion of $-\frac{1}{8}$-in. fines, which creates such problems in coal preparation plants, and also when used on chain grate stokers for industrial or space heating purposes.

The existing range of power-loading systems, including those which are still in the prototype stage, fall readily in two categories: (*a*) Those which can only load prepared coal and (*b*) those which both get and load the coal.

In the case of the first type of power loader the coal requires to be prepared usually on shifts other than the actual loading shift and, therefore, the operation is basically cyclic. Difficulties are thus introduced in achieving a high daily rate of advance and, in consequence, these machines do not generally achieve a high bulk output from any given face. A further disadvantage of such machines lies in the fact that for efficient operation and maximum machine utilization a greater degree of coal preparation is required than for hand-filling.

While "Cardox," "Hydrox" or "Water Stemming" can be used, the coal must still be broken to such a degree that the flight-loading action of the machine is unimpeded. The benefits of such forms of coal preparation in respect of the production of large coal are, therefore, minimized, since the machine cannot display the versatility of conventional hand-filling in dealing with varying degrees of coal preparation. Hall[1] shows that flight-loading machines give, on the average, a percentage loss of large coal (as compared with conventional working) of 27 per cent. with an increase both in $-\frac{1}{2}$-in. and $-\frac{1}{50}$-in. coal.

The machines which both get and load the coal fall into two distinct types; those in which the machine operates on a wide buttock and those taking a thin slice or narrow web. Table 2 sets out the list of machines at present available and shows the minimum height in which it is considered that these machines can work. In many instances the heights quoted are limiting and it is desirable to make the application in seams in excess of the thicknesses given.

TABLE 2.—*Power Loading Machines and Minimum Working Height.*

| Type of machine. | Minimum height of application. |
|---|---|
| | ft. in. |
| *Wide-buttock Machines:* | |
| Meco-Moore cutter loader .. .. | 3 0 |
| Dosco Miner .. .. .. .. | 4 6 |
| Joy Sullivan Buttock miner .. .. | 3 2 |
| Midget miner .. .. .. .. | 1 10 |
| *Narrow-web Machines:* | |
| Anderton Shearer loader .. .. | 2 7 |
| AB trepanner .. .. .. .. | 3 0 |
| Samson stripper .. .. .. .. | 4 0 |
| Gloster Getter .. .. .. .. | 2 4 |
| Multi-jib coal-cutter .. .. .. | 1 4 |
| Anbauhobel & Lobbe Hobel ploughs .. | 1 0 |
| Huwood slicer .. .. .. .. | 4 4 |

### Effects of Reduced Working Height

Because of the difficulty of movement of manpower along the face in seams of thinner section, it would seem necessary to employ either a comparatively slow moving machine working on the buttock so that the men engaged on its operation are not called upon to traverse the face more than possibly once or twice per shift, or some form of narrow web machine which is controlled remotely from the gate or the conveyor gearhead and which does not require close attendance by labour for its efficient operation. So far, among the wide buttock machines the Midget Miner (Fig. 4) is the only one that offers any promise on the grounds of minimum working height. In the narrow web

range there is a much greater choice, but a large number of these machines operate on the principle of cutting out either the whole or a large proportion of the seam section. The range of machines available for thin seam working is therefore considerably reduced.

It is now generally accepted that machines working on the ploughing or slicing principle result in the maximum production of large coal. Lansdown[2] places them at the top of his large-coal league table, while Noble and Potter[3] indicate that ploughs give an increased percentage of +2-in. compared with conventional yields.

The plough allows continuous mining with two-shift working with a high rate of advance, and the control and chain drive is situated remotely from the plough itself. In the past, some form of coal preparation, usually pre-cutting, has been found necessary with the normal hardness of seams found in this country. Recent developments in respect of the hard-coal plough and the use of hydraulic rams in place of compressed air have shown that it is possible to plough quite hard coal from the solid without any form of coal preparation whatsoever.

The Huwood Slicer is virtually an activated coal plough hauled by a chain in a similar fashion to the plough, the oscillation of cutting blades being effected by a 60-h.p. motor through gearing. It has been found necessary to pre-cut the face with this machine, particularly where the coal does not part readily from the natural roof or where a coal roof is required. The standard production machine, as is seen from Table 2, requires a seam height of 4 ft. 4 in. to 4 ft. 6 in., but since the Slicer can make a useful contribution to the mechanized production of large coal, the NCB and the manufacturers of the machine have investigated the possibility of reducing the size of the machine and have developed a prototype which, with pit trials, will indicate whether it will be possible to produce either a thin seam model or two models to cover the range from 2 ft. 6 in. to 4 ft. 6 in.

## UNDERGROUND TRIALS

The practical solution to any problem or difficulty must ultimately be found and proved in the pit. Accordingly, a series of trials have been arranged in No. 7 Area, East Midlands Division, NCB, to establish the relative potential of each of the three machines in terms of bulk output, productivity and large-coal production. At the same time, in the case of two of the machines, there will be an element of experimentation in proving or improving prototype equipment. The machines selected for these Area trials were the Midget Miner, the Huwood Intermediate Height Seam Slicer, and the Westfalia Lunen Anbauhobel.

### The Midget Miner

Virtually a British adaptation of the Russian UKT-1, the Midget Miner consists essentially of a 75-h.p. BJ-D coal-cutter with a capstan haulage from which the conventional cutter gearhead has been removed and substituted by a cutting head. The latter works on the rotary arm principle, four such arms cutting and loading the major portion of the seam while a frame jib, fitted with loading flights in addition to the normal pick-lacing, completes the extraction of the buttock and loads the coal, not loaded by the rotary arms, on a 5-in. section armoured conveyor with which the machine works. As designed at present, the machine is capable of taking a 4-ft. 6-in. to 4-ft. 9-in. web.

Trials with the first machine have already taken place at the Yard seam of New Lount Colliery (2 ft. 6 in. to 2 ft. 8 in. thick) which has a fairly good bind roof and a dry fireclay floor. Although considerable difficulties were experienced in steering the machine in both the vertical and horizontal planes, it can now be regarded as a production machine and shortly a new Midget Miner, incorporating all the modifications found necessary during the nine months' trials with the prototype, will be put to work in the same colliery on a normal production face[4].

### Huwood Intermediate-height Seam Slicer

Although it is ultimately hoped to develop the Huwood Intermediate-height Seam Slicer, to be capable of working in a seam approximately 2 ft. 8 in. thick, it was considered desirable to gain experience in a seam of intermediate section. Accordingly, a face has been prepared to accommodate trials with the first prototype at Bagworth Colliery, where the Yard seam is approximately 3 ft. 6 in. thick, with an immediate roof of fairly friable black carbonaceous shale. The floor is of fireclay which behaves reasonably when dry, the coal parts reasonably well from the floor. Some interaction difficulties are experienced due to the close proximity of the under-worked Lower Main goaf 4-5 yd. below, and ironstone intrusions occur for 20 yd. of the 130-yd. face.

Because of the good roof parting the face is cut just above the mid-point of the seam to a depth of 40 in. using a straight jib. The face is supported by means of hydraulic props and staggered German-type link bars with prefabricated chocks at the waste-edge set between Seaman-

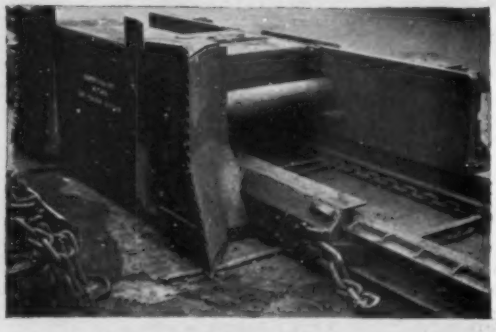

FIG. 5.—INTERMEDIATE-HEIGHT HUWOOD SLICER LOADER.

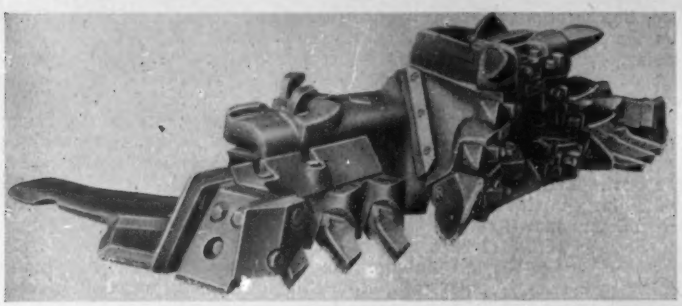

FIG. 6.—WESTFALIA-LUNEN HARD-COAL PLOUGH.

Gullick chocks at 10-ft. centres, which are attached to the Huwood SP.80 armoured conveyor by means of Gullick double-acting rams. The support system involves the setting of a link bar for every 20-in. advance of the face and the prefabricated chocks are also moved forward every 20 in.

The Huwood Intermediate-height Slicer (Fig. 5), is actually a cut-down version of one of the original prototype standard Slicers, the blades of which are powered by two 16/17-h.p. motors. These motors straddle the conveyor and a clearance of just over 11 in. between the "deck" of the armoured flexible conveyor and the underside of the motors is provided. This clearance has been found with a middle pre-cut to be reasonably adequate. The Slicer is hauled along the face by means of a hauler chain powered by a 25-h.p. motor at a speed of 12¾ ft./min.

Trials started early in February, 1959, and have so far been encouraging. It is understood that as a result of the experience gained at Bagworth, and at another colliery in the East Midlands Division, the manufacturers are proposing to design a production model. It may well be that to produce a model capable of working in much thinner seams, a radical re-design will be necessary with the motor actuating the slicer blades being placed parallel to the conveyor and in line with the blades.

### The Anbauhobel

The Anbauhobel differs from the original Löbbe Hobel system in that instead of taking the drive for the plough chain from the conveyor drive itself, the Anbauhobel has separate drives which can be fitted to existing armoured conveyors without any appreciable structural modifications being necessary. In this way, the plough unit can be operated quite independently of the conveyor itself, and the weights and dimensions of the individual parts are smaller than in the case of the special Löbbe Hobel conveyor drive heads.

A further advantage of this system is that in the event of faulting sub-dividing the face, each section can be provided with its own Anbauhobel unit attached to the one conveyor. Apart, therefore, from special work at the fault itself, both sections of the face can be worked normally.

The ideal natural conditions for successful operation are a reasonably hard floor with good floor parting, and a good parting between the coal and the immediate roof.

At present, a face some 110 yd. long is being equipped at Granville Colliery with the Little Kilburn seam (2 ft. 10 in. thick), which has a soft floor and good roof with a good coal parting. The seam is free from dirt and it is intended to cave the face. Ultimately, a face length of 220 yd. will be worked.

Because of the softness of the floor and the comparatively tough nature of the coal it is proposed to use the recently developed Westfalia-Lunen Hard-coal Plough (Fig. 6). This differs from the standard plough in that it incorporates stepped, swivelling kerving bits to pre-cut the face, thereby relieving the bottom bit which on the normal plough has to carry out most of the shearing work. This arrangement makes for a greater degree of stability in the cutting horizon of the plough.

Two types of hard-coal plough are available:—(*a*) with a rigid row of kerving bits; and (*b*) with swivelling kerving bits. In the former the kerving bits are fitted rigidly in the plough base. The clearance angle which the kerving bits form with the floor ensures that the kerving bits are approximately 15 mm. (⅝ in.) under the plough level. If the floor is affected too much, the plough can be lifted by easily adjustable shoes, three different adjustments being possible.

In the latter the essential feature is the swivelling row of kerving bits. According to the seam conditions, the position of the kerving bits can be adjusted between 45 mm. (1¾ in.) under, and 100 mm. (3$\frac{15}{16}$ in.) above the plough base level, and thus the Anbauhobel can be controlled. Adjustment is made by means of a spindle so that any change in position of the kerving bits can easily and quickly be carried out at any point on the face.

Initial experience at Granville Colliery in the Little Kilburn seam has shown that it is possible to plough solid coal with the hard-coal plough, using hydraulic rams for the armoured conveyor, with a surprising degree of success. The control of the plough in the correct cutting horizon, despite the soft floor, has been easier than was expected, and even during the early trial period figures in excess of 6 tons per coal face shift have been achieved.

## CONCLUSION

The focus of this paper has been on the production of large coal at the face, but it would be wrong to close without stressing the need for equal vigilance in respect of the transport of the coal from the face to the point of its ultimate delivery into the

railway wagon. All the care exercised at the face in the careful selection and operation of the right machine can be completely vitiated by excessive breakage of coal during the haulage, winding and coal treatment processes.

The fact that no reference to the correct design of chutes, the elimination of the free-fall of coal and of transfer points and to adequate coal clearance facilities has been made, must not be construed as indicating that these matters are of only secondary importance. In many ways, a more positive improvement in the percentage of large coal produced results from a close attention to these points, especially as their success is quite independent of the human factor and requires no change in habits of the men at the face as, for example, in reducing the intensity of shotfiring on conventionally-filled faces.

The author would like to thank Mr. W. Unsworth, No. 7 Area general manager, for permission to read this paper. The views expressed in it are personal ones and are not necessarily those of the NCB.

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# New Master Schedule of Steel Standards

OVER the years a great many British Standards for steel have been published to meet the demands of industry. There are now more than 100 standards covering steel as a material, many of these themselves containing several separate specifications for different grades of steel. One of the most widely used standards, BS 970, contains detailed specifications of over 100 wrought carbon and alloy steels for automobile and general engineering purposes.

A great many of the steels to these specifications —both in BS 970 and in other steel standards— differ from one another only very slightly but, nevertheless, because each is to a recognized British Standard grade, steel producers are expected to supply any and every type. This difficult state of affairs has come about for two reasons. The first is that over the years, in the major steel-using industries, new types of steel have been specified somewhat haphazardly according to the requirements of designers. The second reason has been a tendency for the British Standards Institution to publish separate steel standards for different groups of users such as the aircraft, automobile, chemical and petroleum, and railway engineering industries.

In order to co-ordinate this large range of steels, with, in some cases, only slightly varying characteristics, the BSI, with the collaboration of the steel industry and of important user-interests, has taken the first step towards ending this unsatisfactory state of affairs, by the publication of the first part of BS 3141, entitled "Master Schedule of Wrought Steels." This first part is concerned with carbon steels. Further parts of the schedule, to be published, will deal with alloy steels with specified chemical composition and steels with specified mechanical properties but without detailed chemical composition.

### Development of the Schedule

In preparing Part 1 of the new schedule, stock was taken of all existing BS specifications for carbon steel. Specifications whose chemical composition varied only very slightly were arranged in groups. Then, for each group a compromise composition applicable to each specification in that group was agreed. Tests and mechanical properties, where appropriate, were also laid down. To avoid complication, only the main features of the steels have been indicated, and an arbitrary system of classifying and numbering the steels has been devised.

Publication of the new schedule will not bring about an immediate change in the specification of steel: its immediate result is that those concerned in drafting British Standards for steels will not be able to add to the existing welter of specifications without showing due justification. For all normal purposes they will be required to choose a suitable specification from the master schedule.

Existing British Standards will also gradually be revised so that the steels specified can be re-classified in accordance with the master schedule. The result of this will be to substantially reduce the number of steels now called for by industry. Long-term results will be to rationalize and simplify British steel production, to permit concentration of output on fewer varieties of steel, thus raising productivity and ensuring better supplies of steel of the kinds most urgently needed by industry.

Copies of the schedule are available from the BSI, 2, Park Street, London, W.1, price 10s. (postage extra to non-subscribers).

# Foam Plugs for Mine Firefighting

FURTHER work on the foam-plug process (described in SMRE research reports 130 and 171) is reviewed in research report No. 182, by E. T. Linacre, published recently by the Safety in Mines Research Establishment, Ministry of Power. Experiments have been made in the laboratory, in a ventilated tunnel and in six mine roadways, to explore the factors controlling the proportion of sprayed liquid converted into foam, the filling of the roadway with foam, and the back-pressure exerted on the ventilation by the net and foam plug.

It is shown by theory and by experiment that there is an upper airspeed limit for adequate filling of the roadway with foam, the limit being about 300 ft./min. for one net design. The spraying rate is of secondary importance in ensuring adequate filling, so long as the volume ratio of airflow and sprayed water is no more than a critical amount, found to be about 2,000 in one set of conditions.

In these particular experiments foam did not move satisfactorily in roadways rising more steeply than 1 in 10 or dipping more steeply than 1 in 5.

# CORRESPONDENCE

*[We accept no responsibility for the statements made or the opinions expressed by our correspondents.]*

## A CABLE BELT CORRECTION

*To the Editor of* THE IRON AND COAL TRADES REVIEW

SIR,—In looking over past copies of your magazine, in particular your issue of December 26, 1958, I have come across the following on page 1528, under the heading "Cable Belt in the US":—

"The first cable belt installation in the United States is reported to have handled 1,250,000 tons of coal in 2½ years of service."

This heading, it is noted, refers to details of rope transmission of belt as reported in "Coal Age," September, 1958.

If your correspondent had taken the trouble to examine the copy of "Coal Age" quoted above, he should have seen that this installation referred to an installation on the North American Continent, at Princess Colliery of Old Sydney Collieries, Limited, Sydney Mines, Nova Scotia. As Nova Scotia is in Canada, we are rather perturbed that a responsible journal like THE IRON AND COAL TRADES REVIEW should allow so glaring an error and lack of recognition that Nova Scotia is part of the Commonwealth. I trust that you will find an opportunity to correct this misleading impression.

This belt is still in operation and is giving excellent service and, I may say, is only one of the many firsts that this Corporation has achieved in the mining industry.—Yours very truly,

LOUIS FROST,
Chief Mining Engineer.

Dominion Steel & Coal Corporation, Limited,
Sydney, N.S., Canada.
December 21, 1959.

# Flame-cleaning a Blast Furnace

FOUR of Europe's largest blast furnaces, located at the Appleby-Frodingham steelworks, Scunthorpe, are periodically flame-cleaned. Recently, there was a departure from the usual method of flame-cleaning, oxygen and dissolved acetylene being used for the work on one of them instead of oxy-propane, and different equipment being employed.

Although equipment supplied by British Oxygen Gases, Limited, had previously been used for flame-cleaning the furnaces, the company's "Saffire" equipment and the orthodox gases—oxygen and acetylene—were used for the first time. Using two sets of "Saffire" equipment, and with six operators working 24 hours a day, the job was completed in a week. Oxygen supplies were taken from the pipeline installed on the furnace, and dissolved acetylene was supplied from manifold cylinders. This method showed a small saving in time as compared with the original process. Its most important advantage was that all scale was removed down to the base metal.

# TERYLENE VENTILATION DUCTS IN COAL MINES

FOR some time now, various materials have been used in British mines for ventilation ducting, including p.v.c.-coated jute, rayon and cotton fabrics. Recently, a bulk order for more than 30 miles of p.v.c.-coated Terylene ventilation ducting (fire-resistant in accordance with National Coal Board requirements) has been placed. This varies in diameter from 12 in. to 24 in. and has been stitched throughout with Terylene thread.

### Lightweight Material

Made up by Robert Watson & Company, Limited, Newburgh (Fife), from a specially woven 2½-oz./sq. yd. twistless Terylene base fabric produced by C. A. Newsholme & Company, Limited, Keighley (Yorkshire), the ducting is about three times lighter than that formerly used. Its use is claimed to result in easier handling, greater efficiency, and longer life. The material also has advantages in damp conditions.

# ULTRA-HIGH-PRESSURE BLAST FURNACE

## *Proposed Lines of Development*

*Development of an ultra-high-pressure blast furnace with a top pressure of 40 lb./sq. in., nearly four times that of any existing American blast furnace, was recently announced by the Koppers Company, Pittsburgh* (IRON AND COAL, *November 13, 1959, p. 846). Koppers is prepared to discuss with pig-iron manufacturers the actual building of such a furnace. The proposal is based on a report "The Ultra-high-pressure Blast Furnace," by Mr. Owen R. Rice, consultant to the Engineering and Construction Division of the Koppers Company, Incorporated, extracts of which appear below.*

THE design of the blast furnace is based on a 28-ft. dia. hearth. Beneficiated raw materials are essential. The shell is continuous structurally from top to bottom. In order to avoid difficulty in containing the substantial pressures within the furnace, there are no perforations for cooling elements except for the tuyeres and the slag notches. Shell cooling is entirely external by vertical water panels attached to the shell plates. The hearth jacket is cooled in this manner. The orthodox cast-iron hearth staves have disappeared. Instead, the hearth jacket is made of 2¼-in. rolled plate.

This thickness is not so much for the purpose of containing the pressure within the furnace, as to provide a mass of cold metal to meet the contingency of an approach of molten iron.

### Hearth-bottom Cooling Ducts

A part sectional view of the hearth, bosh and lower inwall is shown in Fig. 1. The hearth bottom is cooled by means of forced-air ducts located in the concrete pad under the ceramic hearth bottom blocks. The form work for these ducts, the largest of which are only 18 in. dia., consists of heavy paperboard tubes. After the concrete has set, the paper tubes are soaked with water, whereupon they collapse and can be removed.

The panel cooling of hearth wall, tuyere breast, bosh and inwall is also shown in Fig. 1. Carbon walls extend to the mantel. Blowpipes are of alloy steel, designed with stiffening and heat-radiating ribs. Two bridle-bolts, in addition to the usual safety link, hold the tuyere rig in place.

A radical departure from the conventional is the filling device at the furnace top shown in Fig. 2. Gone are the big bell and the rotating distributor. Two small bells act only as a gas lock. Equalizer and relief valves serve to secure balanced pressures across the bells.

Distribution of the beneficiated material—sinter (preferably limed), over-size lumps (not over 2 in.), well-screened coke—is secured by passing the charge through a throat about 7 ft. dia., below the lower bell, on to a pile which is embraced by heavy retaining rings arranged in echelon at an angle greater than the angle of repose of the charge material, so that lumps do not roll down the face of the pile, and so that a pile of controllable shape and height can be maintained.

This filling and distribution system was a development of the Freyn Engineering Company, and was covered by patent in 1936. It has been revived as a feature for the ultra-high-pressure blast furnace.

The usual "round" accumulated on the large bell has disappeared, each skip load now passing immediately through the two bells and into the furnace. The skip sequence is probably two ores followed by two cokes, two ores, two cokes, etc. Skip tubs of 525 cub. ft. gross capacity, 2 min. per skip trip, and 1,350 active charging minutes per day, will provide a filling rate commensurate with a daily production of 4,000 net tons (2,000 lb.) of iron at a coke rate of 1,300 lb./ton. There is a leeway of 90 min. "catch-up" time.

With beneficiated materials and an average ambient pressure within the furnace of over 45 lb./sq. in., the furnace should work smoothly and with regular stock movement. A stock-line test gauge employing a photoelectric principle is directed horizontally between certain of the louvre rings. As soon as the ray strikes the receiver, a skip-load of material is charged automatically. This gauge is supplemented with a mechanical stock rod.

Some 10,000 tons of raw materials would be handled daily through the charging system of a 4,000-ton blast furnace. Most of this material is abrasive coke and agglomerated iron ore. Special measures are taken to face the hoppers, bells and throat with abrasion-resistant coatings. The assembly of these elements would probably be made up as a composite package or cartridge, with suitable provision for expeditious replacement.

### Reduced Height of Furnace

There are strong indications in actual practice that a combination of beneficiated materials and elevated top pressure results in a lowering of top-gas temperature to a point where moisture condensation impends or actually occurs. This can cause uncomfortable conditions at a furnace top.

It is visualized that the heat transfer from the ascending gases to the descending stock materials is accelerated by the openness of the burden and by the greater density of the gases. There is the other

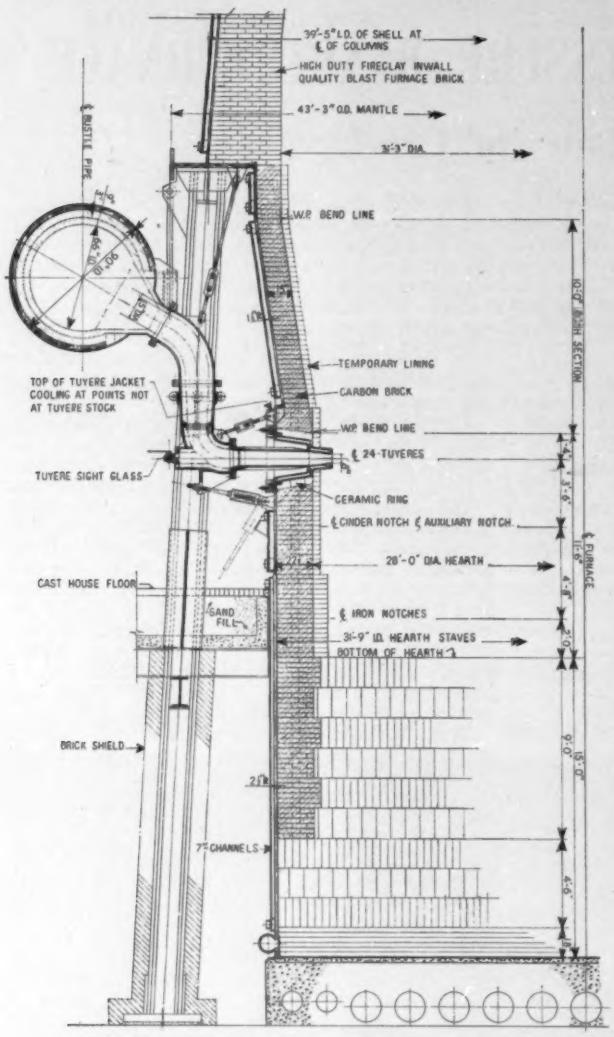



FIG. 1.—SECTION OF HEARTH, BOSH AND LOWER INWALL, SHOWING PANEL COOLING SYSTEM.

quite obvious fact that the condensation point of water vapour goes up with increasing pressure. Hence, the possible desirability of reducing the effective height of standard blast furnaces served with beneficiated charge materials, and operated at elevated top pressures.

In actual practice, indeed, the management of a furnace in the Chicago area, operating on a high percentage of prepared burden and also at elevated top pressure, saw fit, particularly during cold weather, to reduce the stock level at least 10 ft. below the normal 6 ft. under the large bell in order to raise top temperatures so as safely to avoid the annoying condensation of water vapour.

Opposed to the proposal to lower the height of the furnace is the proposition that since one expects greatly increased production from a high-pressure furnace, the blowing rate must be greatly increased, and that consequently the greatly accelerated gas velocity will furnish its own cure for depressed top temperature. This reasoning is faulty, however. It is true that twice the normal blowing rate in a 40-lb. top-pressure furnace is visualized, but the average absolute pressure within the furnace will be almost three times that of a normal furnace. The actual linear gas velocity in the high-pressure furnace will be about 86 per cent. of normal. The gas residence time might be 14 per cent. greater at high pressure. The furnace lines are shown in Fig. 3.

The handling of top gas at 40 lb. pressure has called for the most careful consideration. Power-actuated bleeder valves are oversize. There is one spring-loaded relief valve which opens automatically if the pressure-regulating system fails to function. The uptakes and the downcomer are of normal size. The latter is 6½ ft. dia., as much for structural reasons as for gas-carrying capacity, since the linear velocity of the gas at 40 lb. pressure is actually less than normal. The dustcatcher which is 30 ft. dia. is relatively small.

The gas-cleaning system serves a dual purpose. It is the back-pressure device responsible for imposing 40 lb./sq. in. at the furnace top. At the same time it utilizes the entire differential between 40 lb. and the desired gas delivery pressure (of, say, 1 lb.) to clean the gas. It consists essentially of a series of automatically adjustable orifice plates. They are arranged in the downtake gas main following the dustcatcher. Water is introduced above the uppermost orifice and passes with the gas successively through each of them. The effectiveness of wet-cleaning blast-furnace gas by passing it through orifices or other constrictions is well established.

It has been demonstrated that a 2-lb. pressure drop through such a device will clean reliably to a dust content of less than 0.01 grn./cub. ft. Almost 20 times that magnitude of pressure drop is applied. It is believed that further cleaning measures would be neither necessary, nor even effective. There are no electrical precipitators or disintegrators at the ultra-high-pressure blast furnace.

The uppermost orifice plate causes a pressure drop of only 1.5 lb. maintained automatically.

Immediately below it is a lateral gas offtake of relatively small size, and this conduit leads to the equalizer valves at the furnace top. The pressure differential above and below the lower bell is thus not more than 1½ or 2 lb./sq. in. The subsequent orifices divide between them the remaining 37-lb. pressure-drop, each maintaining its allotted assignment automatically.

The hot-blast stoves are designed for a blast-heating duty of 1,800 deg. F. line heat for a blast period of 75 min., or 2,000 deg. for 60 min. This is accomplished in a stove 30 ft. dia. by 140 ft. high. Blast pressure is 60 lb./sq. in. The checker weight is 4,200,000 lb. and the checker heating surface, 500,000 sq. ft. The gas-burner rate for 1,800 deg. blast temperature is 42,000 cub. ft./min.; for 2,000 deg. blast, 47,000 cub. ft. Burners of 50,000 cub. ft./min. capacity are provided.

At a production rate of 4,000 tons daily, and at a coke rate of 1,300 lb./ton of iron, the daily coke consumption is 5,200,000 lb. At 53 cub. ft. of air per lb. of coke, and assuming a day of 1,420 min. with blast on, the theoretical blowing rate is 194,000 cub. ft./min., say 200,000 cub. ft./min.

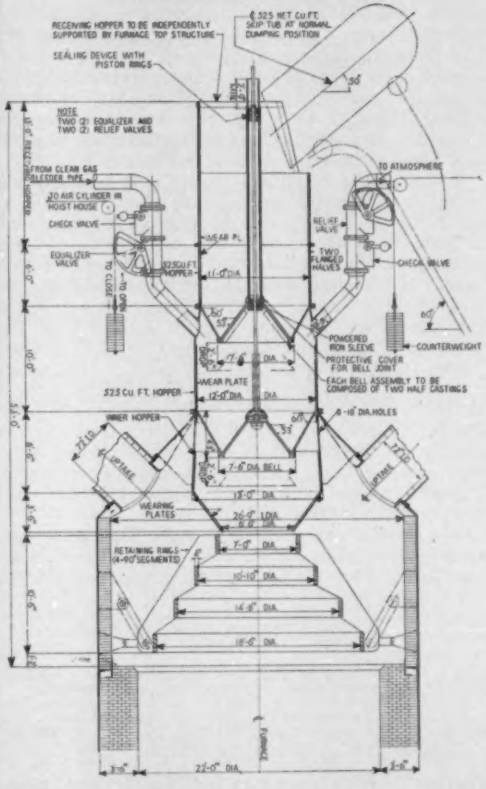



FIG. 2.—FILLING DEVICE AT THE FURNACE TOP SHOWING NEW DESIGN FEATURES.

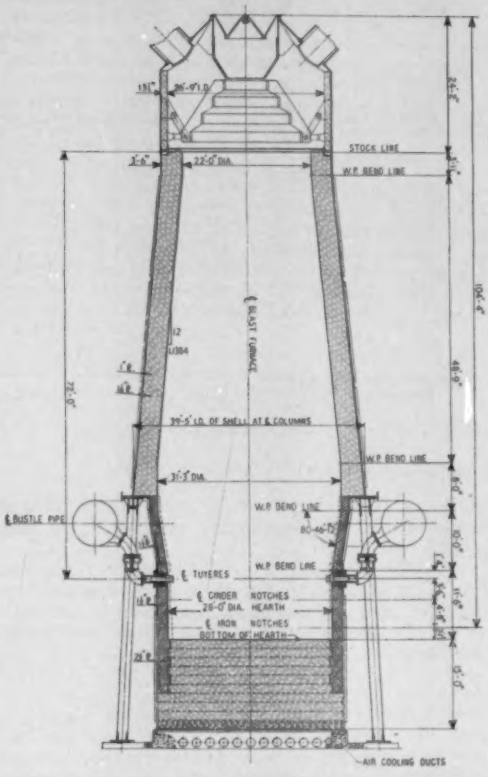



FIG. 3.—GENERAL CROSS-SECTIONAL VIEW OF FURNACE.

It is estimated that the typical blast pressure, with 40 lb./sq. in. top pressure, will be about 55 lb./sq. in. Specifications call for a turbo-blower installation capable of delivering 200,000 cub. ft. of air per minute at 60 lb./sq. in. This equipment considerably outstrips the largest blowing plants currently in use. Intercooling between two stages of the air-compressing unit is planned.

### UHP Blast-furnace Economics

Regarding the economics of the ultra-high-pressure blast furnace proposal, comparison may be drawn between a 28-ft. furnace on normal top-pressure operation, and a 28-ft. furnace on 40 lb. top pressure. Both are served with beneficiated ore; that is, at least 85 per cent. of the burden consists of agglomerates and screened lumps, the remaining 15 per cent. being incidental material of an unobnoxious sort. The normal-pressure furnace is visualized as turning out 2,000 net tons of pig-iron daily, although this production rate is currently not well supported in practice. At the same time there is no doubt that given good charge materials, adequate blowing facilities, competent design and appropriate management

TABLE 1.—*Comparative Operating Pig-iron Costs of Normal Pressure and 40-lb. Top-pressure Furnace.*

| | Normal pressure furnace, 2,000 ton/day. | | | 40-lb. top-pressure furnace, 4,000 ton/day. | | |
|---|---|---|---|---|---|---|
| Raw materials | Per day. | Price. | Per ton pig. | Per day. | Price | Per ton pig. |
| | | | $ | | | $ |
| Ore | 3,400 at | $15.00 = $51,000 | 25.50 | 6,800 at | $15.00 = $102,000 | 25.50 |
| Coke | 1,300 at | $18.00 = $23,400 | 11.70 | 2,600 at | $18.00 = $46,800 | 11.70 |
| Flux | 800 at | $4.00 = $3,200 | 1.60 | 1,660 at | $4.00 = $6,400 | 1.60 |
| Total per ton pig | | | 38.80 | | | 38.80 |
| | $ | | $ | Ratio. | $ | $ |
| Labour | 4,000/day | | 2.00 | 1.35 = 5,400/day | | 1.35 |
| Repairs | 1,700 | | 0.85 | 1.4 = 2,380 | | 0.60 |
| Blowing and steam | 3,000 | | 1.50 | 1.8 = 5,400 | | 1.35 |
| Water | 150 | | 0.08 | 1.3 = 195 | | 0.05 |
| Electric power | 500 | | 0.25 | 1.6 = 800 | | 0.20 |
| Transportation | 1,200 | | 0.60 | 1.9 = 2,280 | | 0.57 |
| Hand. (raw materials) | 400 | | 0.20 | 1.6 = 640 | | 0.16 |
| Refuse disposal | 50 | | 0.03 | 1.2 = 60 | | 0.02 |
| Ladle service | 200 | | 0.10 | 1.6 = 360 | | 0.09 |
| Laboratory | 100 | | 0.05 | 1.2 = 120 | | 0.03 |
| Relining fund | 1,000 | | 0.50 | 1.6 = 1,600 | | 0.40 |
| General works | 400 | | 0.20 | 1.1 = 440 | | 0.11 |
| Gross cost above materials | | | 6.36 | | | 4.93 |
| Credits | 3,000/day | | 1.50 | 1.9 = 5,700/day | | 1.43 |
| Net cost above materials | | | 4.86 | | | 3 50 |
| Total | | | 43.66 | | | 42.30 |

policy, a 28-ft. blast furnace, operating on normal top pressure, can consistently produce 2,000 tons a day.

A daily productivity of 4,000 tons of pig-iron has been ascribed to the 28-ft. ultra-high-pressure blast furnace, and this figure is adhered to although as yet no furnace of that capacity has been built. A simple but superficial approach to the economic appraisal would be to point out that, for a moderate additional capital investment, the high-pressure furnace will yield 700,000 extra tons of pig-iron a year at a cost of $3.94 per ton-yr., and one can compare this figure with $17.00 for the general category of capitalization rate for a new blast furnace. A more useful basis of economic comparison is that of the cost of pig-iron manufacture, including capital charges.

Table 1 presents comparative operating costs at the normal furnace and at the 40-lb.-top-pressure furnace, and Table 2 is an economic summary.

The advantage in operating cost of $1.36 per ton of pig-iron ($43.66 less $42.30) for the high-pressure furnace is agreeable but it is not the total benefit. There is still the matter of capital costs. A careful estimate has been made of how much more the ultra-high-pressure furnace would cost to build and equip than a normal-pressure furnace. There are many items in which the former exceeds the latter. Outstanding among them are the following: the cast house is estimated to cost $176,000 more; the hot-blast stoves and fittings, $421,000 more; refractories, $376,000 more; the turboblowers and boilers, $970,000 more. In only a few categories does the high-pressure furnace cost less. The furnace itself, devoid of the large bell and hopper, and not employing copper cooling, costs $135,000 less; gas-cleaning, $346,000 less. Over all, the ultra-high-pressure furnace is estimated to cost $2,760,000 more to build and equip than the normal-pressure unit.

Considerable contact with the cost of installing large blast furnaces today as an additional unit in an existing plant, points to the typical figure of $12,000,000. (On a clear site, not associated with already existing facilities, the cost is very much more.) A 40-lb top-pressure furnace would then cost $14,760,000. Annual capital charges are applied at the rate of 23 per cent., a figure derived from the fiscal records of the steel industry of the United States for the years 1957 and 1958. The gross income on total capitalization before federal income taxes is 16.35 per cent. It is assumed that the industry expects to uphold this rate. Depreciation averaged 6.23 per cent. of total capitalization; long-term interest, 0.62 per cent. In total, the cost plus expected return from invested capital in the steel industry thus is taken at 23 per cent.

The capital charge for the normal-pressure furnace is then $2,760,000 per year. It produces 700,000 tons of pig-iron, the unit capital charge being $3.95 per ton of pig.

TABLE 2.—*Economic Summary of Normal-pressure and Ultra-high-pressure Furnace Installations.*

| | One normal-pressure furnace, 2,000 ton/day. | | One high-pressure furnace, 4,000 ton/day. | | Two normal-pressure furnaces, 2,000 ton/day each. | |
|---|---|---|---|---|---|---|
| Annual production | 700,000 tons | | 1,400,000 tons | | 1,400,000 tons | |
| Operating cost/ton pig | | $43.66 | | $42.30 | | $43.00 |
| Installation cost | $12,000,000 | | $14,760,000 | | $22,600,000 | |
| Capital cost—rate per cent. | 23 | | 23 | | 23 | |
| per year | $2,700,000 | | $3,490,000 | | $5,060,000 | |
| per ton pig | | $3.95 | | $2.49 | | $3.61 |
| Total cost of pig-iron | | $47.61 | | $44.79 | | $46.61 |

The capital charge for the high-pressure furnace would be $3,490,000 per year, and with a production of 1,400,000 tons, the capital charge is $2.49 per ton of pig. The total cost of making pig-iron at the normal-pressure furnace thus becomes $47.61 ; at the ultra-high-pressure furnace, $44.79 ; an advantage for the latter of $2.82 per ton. However, the high-pressure furnace comes up each year with 700,000 additional tons of pig-iron to which no value has thus far been assigned. If one assumes $50 as a selling value for a net ton of iron, the profit above $47.61 cost is $2.39 on 700,000 tons from the normal-pressure furnace, or $1,673,000 a year.

The profit margin above $44.91 cost is $5.21 on 1,400,000 tons from the high-pressure furnace, or $7,290,000 a year.

An additional profit of $5,617,000 a year on an additional capital expenditure of $2,760,000 is attractive, assuming there is a market for 700,000 additional tons of pig. If it exists, the pig-iron producer will hardly be content with only one 28-ft. normal-pressure blast furnace. The choice would seem to lie between building two normal-pressure furnaces or one high-pressure furnace.

The two normal-pressure units would cost in the region of $22,000,000 with an annual capital charge (at 23 per cent.) of $5,060,000, or $3.61 per ton of pig. The direct operating cost would be about $43.00, a total cost of $46.61 per ton. The total cost of the ultra-high-pressure unit remains at $14,760,000 and the total cost of pig-iron remains at $44.79 a ton. The advantage residing in the 40-lb. top-pressure furnace is $1.82 per ton of pig ; in the yearly production of 1,400,000 tons of pig-iron it means an advantage of $2,550,000 per year for the high-pressure furnace.

Moreover, this advantage is secured not as a result of spending more money but as an accompaniment of spending $7,240,000 less!

# British Iron and Steel Industry Translation Service

THE following is a list of some new translations available from the Iron and Steel Institute under its translation service scheme. Translations are all classified by numbers, and these should be quoted on application, which should be addressed to the institute at 4, Grosvenor Gardens, London, S.W.1. Further lists will appear from time to time.

COCCO, A.: *Consideration of the Chemical Attack of Refractories by Steel Baths during Metallurgical Processes.* " Fonderia Ital," 1959, Feb., pp. 47-51. £4 5s.—1325.

NEUMANN, H.: *Knurling or Grooving of Rolls.* " Neue Hütte," 1959, Apr., pp. 244-246. £3 10s.—1334.

PODGAETSKII, V. V., and A. V. MEL'NIK: *Effect of Structure of Flux on Porosity of Weld.* " Avtom. Svarka," 1955, (4), pp. 58-62. £2 5s.—1336.

DEM'YANCHUK, A. S., and O. P. RYABUSHKO: *Spectrographic Analysis of High-silicon Aluminium Alloy and Welds.* " Avtom. Svarka," 1958, (10), pp. 86-89. £1 15s. —1347.

WEBER, G.: *Recent Investigations on the Relation between the formation of the Chip and Tool Life when Turning Steel with Carbide Tips.* " Stahl u. Eisen," 1958, Nov. 13, pp. 1678-1690. £7 10s.—1355.

NAUMANN, F. K., and W. CARIUS: *Crack Formation in Steels under the Influence of Aqueous Hydrogen Sulphide Solutions.* " Arch. Eisenhü ", 1959, Apr. pp. 233-238. £4 15s.—1373.

DZEN', V. I.: *Welded Gear Wheel Designs.* " Svarochnoe Proizv," 1958, Jan., pp. 19-21. £3 15s. —1377.

GRASS, G.: *Heat Transfer of Rolled Finned Tubes.* " Allgemeine Wärmetechnik," 1956, (5/6), pp. 104-108. £3—1381.

GRASS, G., and F. P. COENEN: *Systematic Examination of the Heat Transfer and Resistance to Flow of Finned Tubes.* " Atom-Kernenergie," 1959, (2), pp. 1-8. £4 5s.—1382.

KRAVCENKO, C.: *On the Determination of the Tensile Strength of Tubes in Ring Tensile Tests.* " Arch. Eisenhüt," 1959, May, pp. 311-314. £3—1389.

NAUMANN, F. K., and W. CARIUS: *The Significance of the Corrosion Processes in Aqueous Hydrogen Sulphide Solutions for the Formation of Cracks in Steels.* " Arch. Eisenhüt," 1959, May, pp. 283-292. £6 5s.—1390.

PAPKE, W. H.: *Limitations in the Evaluation of Gamma Radiographs used for Examining Circumferential Pipe Welds in Accordance with DIN 54 III.* " Schweissen u. Schneiden," 1958, (11) pp. 439-441. £2 15s.—1391.

FELDMANN, H. D.: *Design Principles for Cold Pressed Steel Components.* " Konstruktion im Maschinen-, Apparate- u. Gerätebau," 1959, (3), pp. 82-89. £4 5s. —1392.

HORSTMANN, D.: *Hot Dip Aluminizing.* " Stahl u. Eisen," 1957, Mar. 21, pp. 359-362; Apr. 4, pp. 435-438; Apr. 18, pp. 512-525. £6—1404.

HACHE, A., et al.: *Influence of Photo-synthesis on the Corrosion of Steel in Sea-water.* " Corrosion et Anti-corrosion," 1959, Feb., pp. 56-62. £3 5s.—1407.

PRITYKIN, D. P., and A. V. DRIMBO: *Means of Eliminating Stoppages in Sinter Plants* (summary). " Stahl," 1958, Mar., pp.202-205. £1 10s.—1416.

KHOKHOLEV, K. I.: *Utilization of Granulated Slags for Producing Heavy Panelling and Cast Partitions.* Book:—" Experience in the Use of Blast-furnace Granulated Slags in Structural Works." (From Russian). £6 15s.—1417.

HASIMOTO, H. A.: *Aerodynamic Design of the Open-hearth Furnace.* III-Functions of Lower Furnace. " Tetsu-to-Hagane," 1957, Feb., pp. 117-121. £8—1122.

SAWAMURA, H., et al.: *Effect of Arsenic, Copper, Tin and Molybdenum on Impact Properties of Dead Soft Steel.* " Tetsu-to-Hagane," 1955, Jan., pp. 23-31. £10 —1239.

## Modernization in Scottish Rubber Industry

The £3,000,000 modernization programme, started three years ago by the North British Rubber Company, Limited, Edinburgh, now affiliated to United States Rubber Company, has been completed. This programme included doubling the capacity of the tyre plant, erection of a major new hose plant, modernization of remaining facilities and the erection of a new central steam plant.

# Smokeless Operation of Boiler Plant

THE industrial provisions of the Clean Air Act, 1956, impose a number of requirements on the operators of solid-fuel-fired boiler plant, particularly in relation to the prohibition of dark smoke, the prevention of grit emission and the measurement of smoke and grit emission. It was to help the operators of industrial boiler plant, particularly shell boiler plant, and also those responsible for administering the Act, that a series of articles was published in "The Steam Engineer" between September, 1958, and October, 1959.

These articles, contributed by leading authorities from the British Coal Utilization Research Association, the Fuel Research Station, and industry, covered the fundamentals of boiler operation, hand-fired shell boiler plant, the use of mechanical stokers, pulverized-fuel fired boilers, the measurement of smoke and grit emission and mechanical grit and dust collectors.

These articles have now been reprinted in the form of a 52-page booklet, copies of which are available from John D. Troup, Limited, 90, High Holborn, London, W.C.1, price 10s. (post free).

## New Catalogues, etc.

THE following new catalogues, booklets, etc., have been received and are acknowledged with thanks.

WOLF SAFETY LAMP COMPANY (WM. MAURICE), LIMITED, Sheffield—Illustrated leaflet IL/59 describing the company's new range of flame safety lamps.

CRONE & TAYLOR (ENGINEERING), LIMITED, St. Helens (Lancs)—Leaflet dealing with mechanical handling equipment.

INCANDESCENT HEAT COMPANY, LIMITED, Birmingham — Leaflets No. IN.1, IN.3, IN.4, IN.5 and IN.6 giving details of the special process cast iron "Incanite."

LODGE-COTTRELL, LIMITED, Birmingham—Leaflets with details on electrofilters and the company's special applications including a reference to an installation recently supplied to the Esso Refinery, Fawley.

STURTEVANT ENGINEERING COMPANY, LIMITED, London, E.C.4—Illustrated booklets No. 2504 and 9606 dealing with Multivane fans, type MVAZ (complete with capacity tables and section diagrams) and laboratory machinery, respectively.

JAMES NEILL & COMPANY (SHEFFIELD), LIMITED—Leaflets dealing with the Eclipse general purpose saw, No. 66.

GEORGE ANGUS & COMPANY, LIMITED, Newcastle-upon-Tyne, 1—Booklet complete with illustrations, diagrams, and tables, dealing with conveyor and elevator belting.

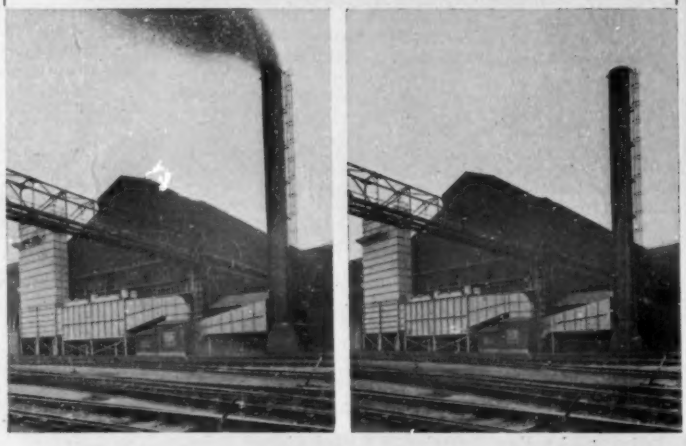
# *Canadian Iron Ore in 1958*

IN a survey of the iron-ore industry of Canada during 1958, compiled by T. H. Janes and R. B. Elver, of the Mineral Economics Section, Mineral Resources Division, Department of Mines (Mineral Information Bulletin MR31) it is recorded that in that year deliveries of iron ore by Canadian producers fell by 28.7 per cent. to 14,177,215 tons, from 19,885,870 tons in 1957. The reduction in value was 27.4 per cent., down from the record of $167,221,425 in 1957.

Of the four producing provinces, British Columbia was the only one to increase deliveries during the year. The United States maintained its position as the major market for Canadian iron ore despite a 32-per cent. reduction in imports during the year. Exports to the United Kingdom and western Europe also decreased. An important feature of the international iron ore market was the relative strength of Venezuelan iron ore deliveries to the United States, United Kingdom and western Europe, while imports from most other major producing countries weakened. Canadian imports for consumption, derived almost wholly from the Lake Superior region of the United States, fell by 25 per cent. from the 1957 figure. Indicated consumption in Canada decreased 20 per cent. during the year to 4,833,202 tons from 5,965,805 tons in 1957.

In 1958, about 37 per cent. of the iron ore received by Canadian iron and steel plants was of domestic origin, compared with 33 per cent. in 1957, continuing the trend towards an increasing proportion of Canadian iron ore being used by the primary iron and steel industry of the country.

## FUME PREVENTION AT ROTHERHAM



*A Holmes-Elex electrical precipitator was recently installed on the deseaming plant at the Rotherham Works of Steel Peech & Tozer (branch of the United Steel Companies, Limited). Above, left, is a view of the plant discharging dense iron oxide fume, while the picture on the right, taken minutes later with the precipitator in action, shows the resultant change in the atmosphere.*

# STOCKPILING TACONITE IN THE US

## Pellet Handling by Belt Conveyor Stacker

THE largest belt conveyor stacker in the United States, designed and erected by the Link-Belt Company, has recently been installed for stockpiling taconite pellets at the world's largest taconite pelletizing plant on the Mesabi Range. It stockpiles between 3,000,000 and 3,500,000 long tons of pellets each winter, when the Great Lakes are closed to navigation.

Commercial development of the taconite-ore bodies is one of the significant technological achievements, since the conversion of low-grade taconite into a high-grade blast-furnace burden material promises to extend the life of the Mesabi Range and America's domestic supply of iron ore for many years to come.

### Car Loading System

At the plant in question, recently completed in north Minnesota, 22,500,000 tons of taconite ore must be handled each year for the installation to work at its rated capacity of 7,500,000 tons of taconite pellets containing approximately 64 per cent. iron. During the summer navigation season, the output of the pelletizing plant, as well as the stockpile built during the winter, is loaded into rail cars and hauled 74 miles to a loading dock on Lake Superior. In the five months of winter production, when the Great Lakes are closed to navigation, taconite pellets are stockpiled at the plant by the belt conveyor system and belt conveyor stacker.

During the summer months, the output of the taconite pelletizing plant is stored in an 800-ton surge bin and loaded into rail cars by means of a shuttle-belt conveyor. Loaded cars are hauled to the harbour for transfer to ore vessels. The car-loading pocket is designed to load 80-ton rail cars at the rate of one car every 2 min. Pellets are fed from the bin by a double reciprocating feeder and are lowered into the cars by the shuttle belt conveyor equipped with a hinged loading boom. The present shuttle belt has a capacity of 2,400 ton/hr., the rate of loading and trimming the cars being controlled by an operator from an elevated, enclosed cab.

A second track beneath the car-loading pocket allows cars to be loaded during an emergency by means of motor-operated undercut gates. In case of car delays beyond the capacity of the surge bin, flow can be diverted to an emergency belt conveyor which conveys the pellets to a temporary stockpile of about 13,000 tons capacity. Should the car delay exceed the capacity of this temporary stockpile, the entire flow can be diverted to the winter stockpiling system.

### Transfer Belt Conveyor

When rail service to the port is suspended and plant production is stockpiled, pellets flow from the plant conveyors to the large travelling stacker *via* a transfer belt conveyor and a trailing belt conveyor. The transfer, trailing, and stacker conveyors are all 42-in. wide belts, designed to operate at an initial speed of 300 ft./min., with provision for a future speed of 525 ft./min., if necessary, to

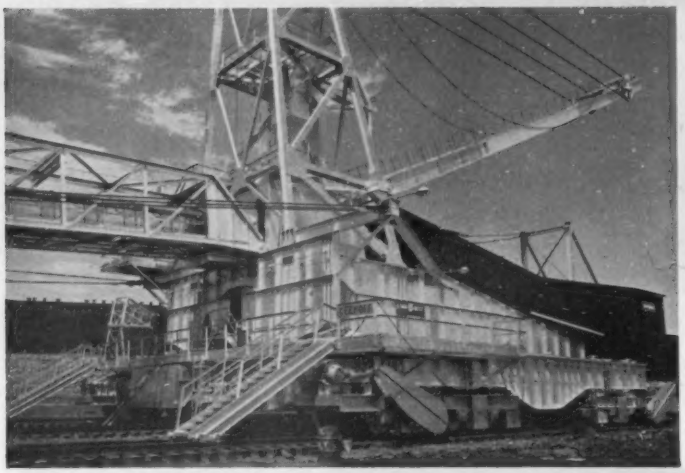


FIG. 1.—STACKER SHOWING EXTERIOR OF MACHINERY COMPARTMENT AND FOUR-WHEEL TRUCKS.

increase the capacity from 1,040 to 1,870 ton/hr.

The transfer conveyor is simply a stationary belt conveyor with a transfer chute at the head end. This belt extends from the car-loading pocket to the trailing belt conveyor transfer house, a distance of 434 ft.

The trailing belt conveyor is 1,380 ft. long between centres and can later be extended to 2,890 ft. It is rail-mounted and moved by means of a drawbar from the stacker undercarriage, advancing and retreating with the stacker. The path of the conveyor consists of a horizontal run approximately 1,070 ft. long and a curved ascending portion of approximately 310 ft.

### The Pellet Stacker

The link-belt rail-mounted belt conveyor stacker has a radius of 275 ft. and is 416 ft. long from the end of the stacker boom to the end of the counterweight boom. From track level to the top of the mast is 93 ft. The machine weighs nearly 900 tons and is self-propelled. The entire stacker is mounted on eight four-wheel trucks connected to the stacker undercarriage by ball-and-socket joints and hydraulic levelling cylinders (Fig. 1).

These eight cylinders provide for automatic load equalization and permit levelling of the unit from the control cab. Drives on the trucks can move the unit 10 ft./min. over a pair of 6-ft. gauge, ballasted sectional tracks, on 60-ft. centres.

The stacker boom has a swing arc of 95 deg. on either side of the track centre-line, and the boom swing speed is variable from 2 to 32 ft./min. at the tip. The boom can be raised to a 16-deg. maximum incline or can be lowered to a position where the end of the boom rests on the ground.

Ability to vary the boom height reduces pellet drop when a new pile is started. It also permits bedding the pile from the bottom to the top, resulting in less abrading or spalling off of the pellet surface than when the entire flow is discharged to the crest of the pile. One man controls the stacker from a fully enclosed, heated cab, complete with insulated double windows which provide maximum visibility and comfort for the operator (Fig. 2).

### Stacker Operation

In the autumn, when the stockpile has been reclaimed and shipped, tracks for the stacker are laid out to the far limits of the stockpiling area. The stacker then moves out to the far end of the storage yard and begins to build the pile to its maximum height.

When the pelletizing plant is operating at normal capacity, the stacker boom beds the material into a pile with maximum dimensions of 1,300 ft. long, 90 ft. high and 550 ft. wide at the top, the stacker retreating an average of 7 ft./day. If necessary, during the winter, pellets can be stockpiled on either

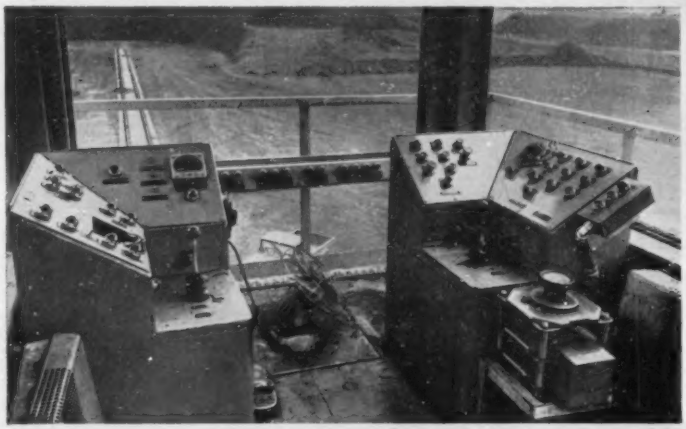


FIG. 2.—INTERIOR VIEW OF CONTROL CAB.

or both sides of the stacker tracks, leaving the tracks clear.

Reclaiming operations begin with the opening of the Great Lakes navigation season, where power shovels reclaim from the pile and load the pellets into ore cars on a rail siding alongside the pile. As successive longitudinal slices are reclaimed from the pile, the siding tracks are shifted to within range of the shovels.

### Safety Features

Although the stacker is designed for stability in a 100-mile/hr. wind with the boom at maximum elevation, the boom can be lowered to the pile or to ground level when desired. All parts are designed for full operation in a 68-mile/hr. wind, but anemometer controls are set to sound a warning at 40-mile/hr. wind velocities, and to actuate a shutdown sequence when winds reach 50 miles/hr.

Special provisions on the stacker permit operation during heavy snowstorms when the end of the stacker boom is obscured from the operator. A set of electric probes is suspended from the outer end of the boom and is arranged to function in two stages, according to the proximity of the stacker boom to the top of the pile. At the first stage, the probes signal the operators at the stacker and car-loading pocket. At the second stage, when the end of the boom is nearer the top of the pile, they actuate a shutdown sequence. This sequence starts the emergency conveyor at the car loading pocket, stops the belts supplying the stacker, and, finally, the stacker, after a sufficient time interval for clearing each belt.

Usually, if running " blind," the stacker operator swings the boom a suitable distance after each warning signal without interrupting the normal flow of pellets over the system. Provision has been made for a wired closed-circuit television system if desired in the future. All operating functions, such as probe location, level of stacker undercarriage, centring of belts, and rotation of belt pulleys, as well as wind velocity, are indicated in the stacker control cab.

For the safety of personnel, skirts and expanded metal covers are installed the full length of the stacker belt to confine any large clusters of pellets that might roll back and bounce when the flow of material is interrupted.

### Design Considerations

Unusual design problems were presented by the extreme weather conditions prevalent in northern Minnesota, the temperature of the taconite pellets as they are handled over belt conveyors, and the abrasive nature of the pellets. The temperature range between the material being handled and the outside temperature can be as great as 300 deg. F. As the taconite pellets are received on the link-belt handling system, they each have a surface temperature of approximately 250 deg. F. with higher internal temperatures.

The temperature of the pellets, contrasted with an average winter ambient temperature of 10 deg. F. and a possible low of −50 deg. F., presented a temperature range in which no belt conveyor had ever operated. Consequently, no test data were available on belts operating under these conditions. Because of the temperature of the pellets, provision was made to clear the system as part of the stopping sequence to protect the belts from prolonged baking action of the hot pellets.

The need for operating continuously in temperatures as low as −50 deg. F. created unusual problems in the selection of materials and the establishment of design limits for mechanical and structural parts subject to shock loads. Extremely thorough investigations were necessary to determine the best alloys for gears, shafts, and highly stressed parts of the boom and mast.

### Dust Protection

Since taconite is an extremely hard and abrasive material, special care was given to designing such items as ventilation and dust control equipment as well as the installation of special seals for bearings and machinery. Due to the heat radiated from the pellets, the car-loading pocket and all belt conveyor galleries are equipped with louvres and power ventilators, except for the trailing belt conveyor.

A complete dust collection and recovery system is mounted on the stacker to protect the machinery, and filtered air is drawn into the operator's cabin and the electrical control room, this being under positive pressure to prevent the entrance of taconite dust into relays, contacts and associated equipment. Other operating, drive and control compartments are equipped with dust exhaustion systems.

Bearings used throughout the system are of the self-aligning roller bearing type with cast-steel housings. These bearings are equipped with triple labyrinth grease seals which keep grease in and exclude dust and other contaminants.

## " We Can Look Forward to Expansion "

SAYS

**MR. RICHARD F. SUMMERS**

*President of the British Iron and Steel Federation*

**ON taking up my office as president of the British Iron and Steel Federation, it gives me great pleasure to send greetings and good wishes not only to the members of the steel industry, but also to the many thousands of people who use its products.**

**I know that the industry can be relied on to devote its whole energy to increasing its efficiency and serving the interests of its customers. During 1960 we can look forward to further expansion and improvement, and, I feel sure, to record production.**

**We are all fully alive to our obligations and responsibilities, and it will be our intention, as ever, to demonstrate that these can best be fulfilled under private enterprise.**

[A portrait of Mr. R. F. Summers faces page 14.]

# *Mining Equipment for Russia*

A RUSSIAN contract for over £250,000 of mining equipment has recently been awarded to F. Taylor & Sons (Manchester), Limited, in conjunction with Climax Rock Drill & Engineering, Limited. The order calls for four mobile, telescopic tower scaling carriages and 15 mobile drilling machines, each mounted with four Holman SL 280 drifter drills. This equipment (Fig. 1) which will be used for drilling very hard rock faces, represents the very latest design in mobile mining plant and is the result of many years' research and development.

The machines for the Russian contract are an adaptation of the Taylor-Hurd design, but they incorporate special features, including the operating platform, which is carried on a double telescoping tower raised by two hydraulic rams from 6 ft. to a maximum of 19 ft. 6 in. from ground level. The machines weigh about 15 tons each and are mounted on crawler tracks. They are powered by electricity which is supplied by means of trailing cables.

Four hydraulically operated booms are attached to the drilling platform, each carrying a Holman SL 280 drifter of 3½ in. bore and having a feed length of 13 ft. The four booms may be raised or lowered, slewed and rotated either individually or simultaneously. All movements are operated from the elevated platform and it will be possible to drill rock faces up to 32 ft. in height.

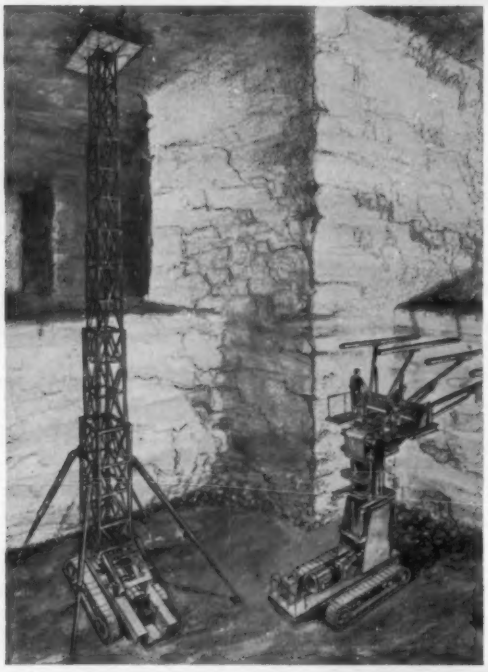


FIG. 1.—ARTIST'S IMPRESSION OF THE MOBILE TELESCOPIC TOWER SCALING CARRIAGES, ON THE LEFT, AND THE DRILLING RIG, ON THE RIGHT.

The four roof-scaling carriages, which will be used for roof bolting, are mounted on identical chassis to the mobile drills. Extending to a height of 82 ft. 3 in., the platform will carry men and equipment up to a maximum weight of ½ ton. It is mounted on a telescopic tower comprised of five nesting sections which, when collapsed and folded, will have an overall height of only 10 ft. 10 in. Wire ropes are used to elevate and lower the platform, and limit switches will prevent raising of the tower unless the machine is on an almost level surface. Four stabilizing legs will prevent any tendency for the tubular steel tower to overbalance.

Delivery of the first machines is scheduled for April, 1960.

## Drill Box for Methane Drainage

DESIGNED by Mr. E. Eaton, assistant methane drainage engineer in the North Staffordshire Area, and Mr. D. C. Yates, the Area's methane drainage specialist, a methane drainage drill box and water recirculation system has proved successful in trials at Chatterley-Whitfield Colliery. The purpose of the drill box is to give compliance with the code of practice for methane drainage systems, which lays down that drilling shall be done through a suitable arrangement permitting the sealing off of any sudden efflux of gas from the hole, and that no firedamp shall be discharged into an intake airway.

The Whitfield box consists of a stuffing box built into a standard 3-in. tee piece, and can be constructed cheaply in a colliery workshop from readily-available equipment. The most suitable packing medium has been found to be ¼-in. square graphite-impregnated steam or compressed-air packing.

The stuffing box is constructed by brazing a non-ferrous retaining ring inside one end of the horizontal section of the tee piece. The packing medium is held between this retaining ring and an annular gland nut which can be adjusted to give a firm seal between the packing and the drill rod which passes through it.

A 3-in. sluice type valve is fitted to the vertical section of the tee piece to control any sudden release of gas or water while rods are withdrawn. Through this valve return water passes to the re-circulation system. The inward end of the horizontal section of the tee piece is attached by a flexible coupling and a quick-release joint to another 3-in. sluice valve which is used to seal off the hole once the bit has been withdrawn.

The water re-circulation system has been developed to reduce the amount of drill water used and thus eliminates rapid deterioration of roadway conditions when excessive water is present. The main feature of the system is a settling tank which allows drill cuttings to be drained off before the water is re-circulated. The return water passes through a sieve box before passing into the tank. This sieve box facilitates the taking of strata samples during exploratory drilling operations. The tank is mounted on a mine car chassis to give full mobility and has a capacity of 130 gal.

# *Belt Conveyor with Suspended Idlers*

## INCREASED LOAD-CARRYING CAPACITY

EFFECTIVE training of conveyor belts largely depends on the complete contact of the belt with the idlers. With troughed conveyors of conventional design, this contact is sometimes difficult to obtain, especially with an empty belt.

The difficulties arise from the fact that the fixed troughing angle of the load-carrying idlers is a compromise between the maximum angle required to give a high carrying capacity and elimination of spillage, and the minimum angle to obtain constant contact between the belt and idlers to give good belt-training characteristics.

In order to overcome these problems, the Mining Engineering Company, Limited (Worcester) has designed a belt conveyor with suspended load-carrying idlers which gives a troughing angle varying with the load carried. The new design ensures complete contact between the idlers and the belt, even when the belt is running empty.

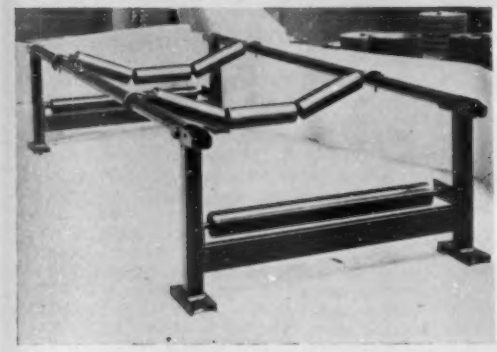


FIG. 1.—STRUCTURE OF BELT CONVEYOR WITH SUSPENDED IDLERS.

Compared with conventional belt conveyors, an increased carrying capacity and a smooth, undulation-free passage for the coal is obtained with a reduction in the amount of degradation and spillage.

### The Supporting Structure

The structure for each unit length of the conveyor (Fig. 1) is made up of three basic components: the supporting stool and two tubular stringers. The supporting stools are fabricated from rectangular tube with the cross-member below the level of the return belt roller. The cross-member is triangular with the apex of the section uppermost to prevent accumulations of dust.

Tubular stringers slot into the open channel section at the top of the side members of the supporting stools and are secured in position by simple knock-in pins. The assembled structure has good lateral rigidity to maintain alignment, yet affords vertical flexibility to follow floor undulations. Light and easily transported, the structure stacks compactly and is erected or dismantled without the use of tools.

### Variable Troughing

Resilience in load-carrying idlers has been introduced by spring suspension of the two side rolls, and coupling them to the central roll with a flexible connection. Standard rollers of Meco design with sealed, grease-packed bearings, are used in the suspended idler system. Heavy spring assemblies, housed within the side rollers, are suspended on the stringers by hooks located by a semi-circular clip held in position by counter-sunk spigots which drop in holes drilled in the tubular stringers. The sliding joint between the suspension hook and the roller spindle is protected by a rubber bellows seal.

The three rollers are flexibly coupled together with flat-link chain to allow the troughing angle to vary with the load. When the belt is empty the troughing angle is approximately 20 deg. which allows the stiffest belt to make contact with the middle idler for effective belt training. As the load being carried increases, the trough formed by the idlers deepens by a maximum of 3 in. when the troughing angle is about 35 deg. Fig. 2 shows the idlers troughing under heavy load.

The position of the suspended idlers can be adjusted for correct belt training by placing the suspension hooks on one side or the other of the locating clips, the retaining pin for the clips conveniently forming a stop for the hooks in these two positions.

The 4-in. lower idlers for the return belt are also

FIG. 2.—INCREASED TROUGHING ANGLE WHEN CARRYING HEAVY LOADS.

of standard design and are also adjustable for controlling the tracking of the bottom belt. Bottom rollers are positioned above the cross member of the supporting stools so that during installation the return belt can be run over the rollers without threading.

The return rollers carry the belt 12 in. above floor level and there is ample room under the stool cross-member for cleaning out. The deep troughing characteristics of the suspended idler make possible the use of open-type structure. Cover plates can, however, be fitted for the protection of the bottom belt at loading points if required.

### Trial Installation

At a colliery in No. 7 Area, East Midlands Division, NCB, a 45-yd. trial length of Meco suspended idler structure was installed in a 400-yd. long surface drift, almost 12 months ago. The installation in the 1 in 4 drift has given satisfactory service and is carrying a daily output of large coal of about 1,600 tons and peak loads as high as 330 ton/hr. have been conveyed.

# Problems of Shift Work in Industry

MANY industrial employees seem ready to work unusually long shifts so as to gain long unbroken leisure periods, according to the experience of several management representatives who attended a recent London conference on shift work problems. The conference was arranged by the National Institute of Industrial Psychology so that people from various industries could, with the help of research workers, compare notes on such questions as the effect of shift working on productivity, absenteeism, accidents, training and domestic life.

The most popular shift worked at one organization represented at the conference lasted 14½ hr., including meal breaks, on each of three successive days, after which the worker had three days off. Mr. J. Walker, of the Medical Research Council's industrial psychology research group, described a system of day and night shifts alternating at weekly, fortnightly or monthly intervals. Absenteeism tended to be higher on the day shift but, when the change was monthly, increased from week to week on the night shift and decreased steadily on the day shift. This suggested that night work gradually impaired fitness or inclination for work and that the fatigue of the night shift affected the first week of day work.

Day shift output also tended to improve and was usually slightly higher than that on night shifts. At one big steelworks, said Mr. Walker, about three-quarters of the absence without permission was on a shift starting at 6 a.m. though absence with permission was spread more evenly over the three shifts. This seemed to show that the absenteeism on the early shift was unpremeditated and might be because of the starting time. An adjustment of the shift timings might help.

## NACM CONFERENCE

## *Accommodation*

**FOR the benefit of members of the National Association of Colliery Managers who plan to attend the 1960 annual conference, to be held at Southport (Lancs) from June 1-3, a list of the principal hotels in Southport is given below. When writing to book accommodation, members should state that they are attending the NACM conference.**

**Conference headquarters will be at the Palace Hotel, where there is only limited accommodation available. Bookings at the CLIFTON are already completed. Prices given in parentheses in the following list are approximate bed and breakfast charges. Asterisks denote licensed premises.**

***QUEENS, Promenade (30s.); *ROYAL, Promenade (32s. 6d. to 35s.); *PRINCE OF WALES, Lord Street (37s. 6d. to 47s. 6d.); *SCARISBRICK, Lord Street (28s. 6d.); *BOLD, Lord Street (25s.); BRUNSWICK, Lord Street (29s. 6d.); CARLTON, Lord Street (25s.); TALBOT, Portland Street (19s. 6d.); WAVERLEY, Promenade (21s.); ST. IVES, 10, Albany Road (15s. to 18s. 6d.); STUTELEA, 15, Alexandra Road (14s. 6d.).**

**WATERSMEET, 7, Argyle Road (13s. 6d. to 18s.); EDENDALE, 83, Avondale Road (19s. 6d.); KELMSCOTE, 30, Bold Street (15s.); CRAGIE LEA, 38, Bold Street (21s. to 23s. 6d.); SUNNYSIDE, 2, Castle Walk (12s. 6d.); SPRINGBANK, 6, Church Street (16s. 6d.).**

**SUNNYSIDE, 78/80, King Street (15s. 6d.); KNOWSLEY, 2, Knowsley Road (17s. 6d.); EYREDENE, 8, Knowsley Road (17s. 6d.); WHITWORTH, 16, Lathom Road (16s. 6d.); GILTON, 7, Leicester Street (17s. 6d.); CRAIGEN-GILLAN, 11, Leicester Street (12s. 6d.); BARROWFIELD, 37, Leicester Street (17s. 6d.); HOLLY LODGE, 103, Leyland Road (17s. 6d. to 21s.); CECIL, 110, Leyland Road (17s. 6d.).**

**ARTHERLEY, 35, Princes Street (15s. 6d.); STELLA MARIS, 25, Promenade (16s. 6d. to 17s. 6d.); SOMERSET, 49, Promenade (20s. to 21s.); BOND'S, 51, Promenade (18s. 6d.); POMME d'OR, 58, Promenade (17s. 6d.); MONTROSE, 72, Promenade (17s. 6d.); ROSEDALE, 11, Talbot Street (14s. 6d.); SYCAMORE, 69, Talbot Street (15s. 6d.).**

## *Publications Received*

WE acknowledge with thanks the following house organs and other publications received.

NATIONAL COAL BOARD (NORTH WESTERN DIVISION), Manchester—"Pit Prop," November. MINING SOCIETY, St. Helens (Lancs)—"Magazine," Vol. 5. LEEDS UNIVERSITY MINING SOCIETY—"Journal," Vol. 35, 1959. E. I. DU PONT DE NEMOURS & COMPANY, Wilmington, Delaware (US). BRITISH ROPES, LIMITED, London, S.E.7—"Rope Talks," No. 39. METROPOLITAN-VICKERS ELECTRICAL COMPANY, LIMITED, Manchester—"Gazette," Vol. 30, No. 482. INTERNATIONAL COMPUTERS AND TABULATORS, LIMITED, London, W.1—"ICT," No. 2. INSTITUTION OF MECHANICAL ENGINEERS, London, S.W.1—"Chartered Mechanical Engineer," December. E. BOYDELL & COMPANY, LIMITED, Manchester—"Boydell Bulletin," November.

# New Equipment and Products

## Improved Slow-speed Hydraulic Motor

LATEST addition to the Staffa range of hydraulic equipment of Chamberlain Industries Limited, of Staffa Works, Argall Avenue, London, E.10, is the Staffa Mark V slow-speed hydraulic motor. The new motor has seven cylinders, each having a bore diameter of 4 in. and a stroke of 3 in.

While the general design is similar to the well-known five-cylinder type, the crankcase and cylinders of the new model form a monobloc casting, with the seven cylinders arranged radially and each fitted with a detachable head. At the normal working pressure of 2,000 lb./sq. in. the manufacturers state that the maximum output torque is 6,650 lb.-ft. with an overall efficiency rating of 94.2 per cent. The speed range is 0-75 r.p.m. and the driving shaft may be safely loaded to six tons overhang weight. For starting and peak-loading, the pressure can be increased to 3,000 lb./sq. in., giving an increased output torque of 10,000 lb.-ft.

Like the original five-cylinder type, the speed of the Mark V hydraulic motor is infinitely variable within the stated range, and in either direction of rotation.

## Chain-grate Ash Extractor

RECENTLY introduced by Riley (IC) Products Limited, London, W.C.1, the Riley automatic ash extractor (Fig. 1) has been developed as a standard item for installation with most sizes of either new or existing Riley-type "T" chain-grate stokers.

The extractor is a conveyor type and is designed so that there is limited wear on the moving parts since the ash is stationary on the apron plates and moves in relation to the conveyor, not in opposition to it as in the case of scraper and drag link conveyors. The conveyor travels at a constant speed of 3½ in./min., and is driven by a separate gear assembly comprising an ¼-h.p. geared motor with a reduction of 1,440/0.96 r.p.m. and a further gear train with a 3 to 1 reduction, giving a front shaft speed of 0.32 r.p.m.

A spring loaded clutch with the driven half on a splined shaft protects the gear assembly from overload. Provision is made for tensioning the conveyor.

A steam cleaning assembly, which is claimed to operate for about 15 sec./week and use less than 1lb. of steam in the process, is incorporated to remove any fine particles of ash which penetrate to the inside of the extractor. The ash box at the front of the stoker provides for an ash chute to a water trough conveyor, but it can be fitted with a draw-plate for discharging ash into a low trolley or pan with runners attached.

The advantage of an automatic ash extractor is that it eliminates the frequent opening of ash doors and thus prevents the ingress of air which cools the furnace gases and reduces efficiency. Forced draught fans do not have to be stopped while ashing is in progress and there is, of course, a great saving in labour.

In plants where automatic control is considered desirable, an ash extractor is the complement of a coal bunker or conveyor for charging the stoker hoppers.

## Higher Loading Rates for New Loader

AN important advance in loader design is claimed by E. Boydell & Company, Limited, Old Trafford, Manchester, with the introduction of the new Muir-Hill 2WL model. This machine combines a 50-deg. roll-back bucket action with a pry-out force of 7,100 lb.—more than double the previous rating—and can obtain a heaped load from a stockpile at a single "bite," thus obviating the need for repeated ramming, and resulting in faster operation, increased loads, and reduced wear and tear.

The new 2WL retains all the outstanding design characteristics of the previous model, including Muir-Hill patent double three-point suspension, grouped controls, good visibility and a high standard of driver comfort. Additional advantages include a more powerful Fordson Power Major 3.6 litres four-cylinder diesel engine which develops a maximum of 56 b.h.p. at 1,800 r.p.m. and a maximum torque of 171 lb.-ft. at 1,200 r.p.m.

Power is transmitted through a Borg & Beck 13-in. single dry-plate clutch to a constant mesh gearbox providing six forward speeds of 2.0, 2.8, 3.5, 5.0, 7.0 and 12.6 m.p.h., and two reverse speeds of 2.6 and 4.8 m.p.h. Final drive is through a double-reduction driving axle with a four-pinion differential and spur bull pinions and gears. Hydraulic transmission, incorporating a torque converter, is an optional extra.

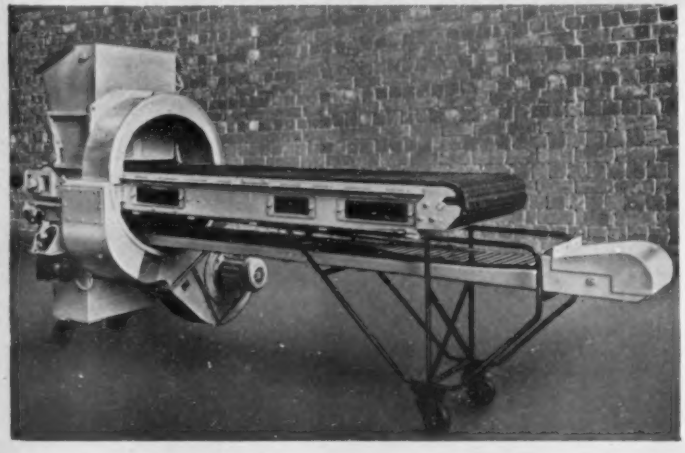


FIG. 1.—ASH EXTRACTOR WITH A CONSTANT SPEED OF 3½ IN./MIN., FOR USE WITH THE RILEY-TYPE "T" CHAIN-GRATE STOKER.

A full range of general and special purpose buckets, of from ¼ to 2 cub. yd. capacity, is available for use in conjunction with the loader. Now of an improved shape, these buckets are fitted with abrasion-resistant blades and cheek plates.

The height of lift under the lip of the tipped bucket is 9 ft. 8 in. with 11 ft. 8 in. clearance under the bucket hinge. The outreach at this point is 3 ft. 6 in. from the front of the machine, and the maximum outreach, 6 ft. 2 in. Maximum lift height of the beams is controlled by a limiting device to prevent strain on the hydraulic system.

To facilitate rapid repairs in the field, hoses with re-usable end fittings have been introduced. All appropriate pivot points on the frame and beams and bucket linkages have renewable lubricated bushes with the pivot pins locked by keep plates.

### Gravity Die-casting

USING inexpensive dies and capable of operating without previous die-casting experience, a simple die-casting machine has been introduced by the foundry division of Electric Resistance Furnace Company, Limited. It has been designed to reduce both the capital and running costs of producing iron and light metal castings which do not need to be made within close dimensional tolerances.

The machine has a two-way cylinder for closing and clamping the dies and requires only a supply of compressed air for its operation. The die heating and cooling arrangements of conventional die casting machines are not required, the dies are made in a grade of Meehanite metal to withstand thermal shock and the machine is used in banks of sufficient numbers to allow time for natural cooling.

For making iron castings weighing about 3 lb. the dies require a cooling time of about 4 min. In this time two operators, one pouring and the other removing the castings, can tend 15 machines and produce 225 castings an hour.

Dies are designed by the company from customers' drawings and supplied ready for insertion into the

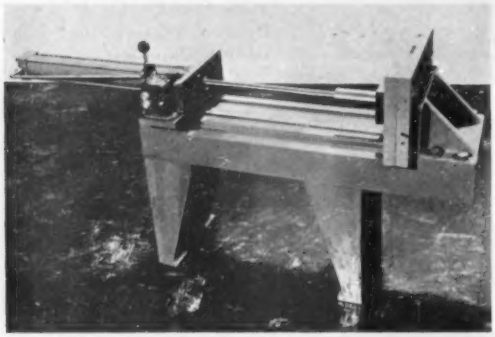


FIG. 2.—EFCO GRAVITY DIE-CASTING MACHINE SHOWING A DIE CLOSED READY FOR POURING.

casting machine. They are made by the "true to form" as cast technique.

The EFCO machine (Fig. 2) has an overall length of 3 ft. 10 in., is 9 in. wide and stands at a convenient height for pouring. It will accommodate dies up to 10 in. by 8 in. in face area. A bank of five machines with gangways and stillage/bogie room occupies a floor space of about 8 ft. by 8 ft.

### Conveying Steel Samples

DESIGNED to carry 4-lb. steel samples at speeds of up to 40-50 m.p.h. between furnace and analytical laboratory, a new air-tube system, operated by compressed air, has been introduced by Lamson Engineering Company, Limited, London, N.W.10. The high speed analysis of samples in the course of a melt is of great importance in modern steel production and the time spent in transferring the sample from furnace

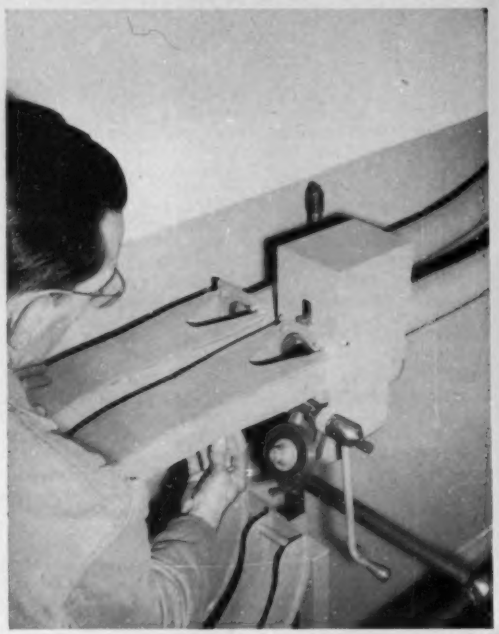


FIG. 3.—A CARRIER BEING INSERTED INTO THE LAMSON STEEL SAMPLE AIR-TUBE.

to laboratory affects the rate of production, the handling of samples while still hot having distinct advantages.

The carrier (Fig. 3) in which the sample is conveyed measures internally 2 in. dia. by 4 in. long. The head is in the form of a sleeve fitting over the carrier. The tubing in which it travels is 3 in. dia. and can be laid underground, overhead or inside ducts. When the carrier is inserted in the end of the tube a door is shut, automatically operating an air-valve which admits compressed air for a pre-determined period to propel it to the receiving end. The door then opens to allow another carrier to be inserted or one to be received.

Normally only one tube is needed with carriers passing in both directions. Where traffic is heavy, however, a two way system can be installed, using each tube for one direction only. This system has been extensively tested by a leading steel manufacturer. The distance of 1,250 ft., between the furnace and laboratory, is traversed in 17 sec.

# IRON AND STEEL TRADE

THE New Year dawns upon a pleasing prospect. Industrial optimism acknowledges no restraints. For the steel industry Mr. Richard F. Summers, the new president of the British Iron and Steel Federation, has set a target of 24,000,000 tons for 1960, and it seems well within the compass of attainment. It is amply covered by existing capacity, and further big expansion schemes will approach completion as the year advances. Markets, too, are booming. Shortages are beginning to develop in various sectors, and restocking has added weight to the rising consumer demand.

### Pig-iron

There are still fewer blast furnaces working than there were a year ago, but a substantial increase in pig-iron production has been achieved largely by the more extensive use of sinter and of oxygen blowing. Steel-works appear to be receiving adequate supplies of hot metal from their own blast-furnace plants and, if necessary, these can be augmented.

Foundry iron requirements have hitherto varied between very narrow limits, but there are indications of improving conditions in the cast-iron trade, which promises to impart an impetus to a market for No. 3 foundry pig-iron which has hitherto been very de-pressed.

### Ferro-alloys

Despite the Christmas and New Year holidays, business has continued at an active level and most items are in good demand. Ferro-tungsten, however, remains a somewhat quiet feature. Ferro-vanadium and ferro-molybdenum continue to attract moderate attention. Ferro-silicon is quite active and the call on ferro-chrome and ferro-manganese is at a good level. There is a good demand for ferro-niobium and in-terest in ferro-titanium is also maintained.

The various grades of ferro-silicon and both the low- and high-carbon grades of ferro-chrome are in-creased in price by varying amounts as from today (Friday).

### Semi-finished Steel

The re-rolling industry has been a conspicuous bene-ficiary of the steel boom. Producers are operating to the limit of their capacity and are offered more busi-ness than they can handle. Pressure for supplies of billets and slabs has correspondingly increased.

To this swollen demand British steelmakers have made a generous response, but still supplies are barely adequate and if some expansion of imports can be arranged such supplementary supplies would no doubt be welcome as a means of overcoming temporary difficulties.

### Finished Steel

For the finished steel trade the most significant development is the gathering momentum of the capital investment programme and the consequent rise in the demand for the heavier types of steel products. Hitherto, makers of light steel products have enjoyed a long lead in the race towards recovery, but big constructional projects are now afoot and engineers must of necessity place their orders for joists and sections well in advance of the required delivery dates to avoid ultimate delays in the ordered progress of their contracts.

Thus, the heavy rolling mills are more busily en-gaged and bulk buying is enabling them to arrange rolling programmes on a more satisfactory scale.

## Associated Engineering's Expansion Plans

COST of the next phase of the expansion plan of Associated Engineering, Limited, may exceed £5,000,000 in addition to normal plant replacement over the next three to four years, states the chairman, Mr. H. R. Moore, in his annual review. Capital expenditure schemes totalling £2,100,000 have already been sanctioned and it is estimated that some £1,250,000 will be spent in the current year.

Since the financial year-end a contract has been signed for the purchase of Pistone Borgo, of Turin, piston manufacturers, as a base on which to expand activities in the Common Market area. The initial investment will be around £300,000 and with other plans for the area, it is probable the total investment there will be doubled or trebled over the next two or three years.

Group turnover for 1958-59, despite a material reduc-tion in the first six months, showed a substantial increase on that of the previous year. Group net profits expanded to £1,522,320 (£1,229,061) and the dividend is raised from the equivalent of 13¼ per cent. to 17½ per cent. on a capital increased by a one-for-two scrip issue.

The board is confident that net current assets of £5,170,122, together with anticipated retentions of the next few years, will be sufficient, without calling on shareholders, to enable the further programme of modernization and expansion to be carried out.

## *Aluminium, Limited, Forms UK Subsidiary*

A NEW company, Alcan (U.K.), Limited, has been incorporated in England to take over the business of the London branch of the Canadian company of the same name. It is a fully owned subsidiary of Alu-minium, Limited, of Canada, and will be responsible for the distribution in the UK, Eire, and Scandinavia of Alcan aluminium and various other materials, in-cluding magnesium, bauxite, and chemicals, produced by associated companies.

Mr. R. A. Gentles is the chairman and managing director of the new company, the registered office of which is at Aluminium (Canada) House, 30, Berkeley Square, London, W.1.

SUBJECT TO Glasgow Corporation disposing of the firm's present premises, Wilson Pipe Fittings, Limited, has agreed in principle to move to the new industrial estate at Irvine (Ayrshire).

*Coalfield News*

# Encouraging Message to Durham Miners

CONVEYING seasonal greetings to miners in the Durham Division of the NCB, Dr. William Reid, chairman of the Divisional Board, says that the passing year has been a testing one for the industry and they have only weathered it by working so well together. He says that close co-operation between management, men, and trade unions has made possible a large measure of continuity of employment for which the Durham Division will always strive.

"Hardships there have been for some—and we regret it, but for the vast majority 1959 has been a good year." Looking to the future he says that trade for their products is reviving and by vigorous action they hope to more than match their year's production by greater sales. But their efforts for higher productivity and greater safety must continue without ceasing in the New Year.

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AN INCREASE in the pay of coal-mining craftsmen of 1s. per shift has been awarded by the industry's national reference tribunal. The award, which was originally made on December 18, has been confirmed by the NUM.

THE MILLIONTH TON of the year was drawn at Maltby Main Colliery (Yorks) on Tuesday. This is the first time the figure has been reached since pre-war years. Maltby Main miners also exceeded the previous record daily tonnage and the "bull" week total.

FIRST 1960 ISSUE of Mining Review, the NCB's monthly newsreel, contains items on High Marnham power station (Notts), Charlie Palfreyman, a miner with craft hobbies, Schofield, Birmingham City's goalkeeper, and an emergency rescue station call-out system in Fife.

MR. STANLEY MELLORS, who resigned for health reasons as Labour candidate for North-East Derbyshire at the general election, has been elected senior vice-president of the Derbyshire Area of the NUM, succeeding Mr. Tom Swain, who took his place as candidate and was elected to Parliament.

THE TRANSFER of 180 miners from Carberry Colliery, near Musselburgh (Midlothian), to neighbouring collieries took place on Monday. Carberry, which employs 487 men, is to be closed down under the NCB's economy plans. The transferred men have taken up jobs at Bilston Glen, Dalkeith, and Woolmet collieries. The remainder of the miners will be transferred from Carberry early this year.

PROTESTS WERE MADE at a meeting on Wednesday of last week of the Yorkshire Area council of the NUM at the NCB's intention to start a new open-cast coal site at Sheepcote, near Clayton West, between Huddersfield and Wakefield. Mr. Alwyn Machen, Area president, said that representations would be made to the Divisional Coal Board and there was no doubt that the matter would be raised nationally.

BECAUSE OF THE steady decline in the volume of work since the end of coal allocations in July, 1958, and the cut in open-cast operations, the Ministry of Power has closed its regional offices in England. Staff has been reduced during the past two to three years and only about 100 people are affected by the closure. Some of these are due to retire and the remainder will be moved to London or to other departments.

FOLLOWING PROTESTS by local authorities and landowners, the NCB has abandoned plans to prospect for open-cast coal on 31 sites in Derbyshire. Originally the board had a programme for 54 sites in the county, but the 31 had been dropped while prospecting on some of the remainder had been completed or temporarily deferred, Sir James Bowman, chairman of the NCB, stated in a letter to Mr. George Oliver, MP.

ABOUT 60 MEN MADE REDUNDANT by the closure last July of Blairmuckhill Colliery, Harthill (Lanarkshire), have been interviewed by NCB officials with a view to filling vacancies at Overtown Colliery, near Wishaw (Larnarkshire). Vacancies will arise as developments are completed. Several men at Greenrigg Colliery (Stirlingshire) who will be redundant in the early part of this year when part of the colliery is closed will also be offered alternative employment at Overtown.

CONCERN THAT SHORTAGE of rail transport is losing coal sales has been expressed by Nottinghamshire miners. After a recent meeting of the NUM Area council, the president and secretary, Mr. Jack Tighe and Mr. Albert Martin, said that in one week in November 30,000 tons of coal which could otherwise have been sold had to be put to stock through shortage of rail transport. At Calverton Colliery, the latest Nottinghamshire pit to come into production, 5,000 tons of coal could not be moved because of lack of engines and men to move the trucks which were in the sidings.

DURHAM MINERS raised almost 495,000 tons of saleable coal in the "bull" week which ended on December 19. While this was 15,000 tons below the level for the corresponding week of 1958, the labour force has decreased by 4,700, to 93,300. In terms of productivity, however, saleable output per manshift in the current period, increased by 0.3 cwt. to almost 22 cwt. The increased production, if the labour force could have been maintained, would have resulted in a further 30,000 tons of output. As a result of their increased efforts, Durham miners shared a £1,250,000 wage packet—about £50,000 more than a normal week.

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# *Board Appointment for NCB Secretary*

SECRETARY of the National Coal Board since 1951, Mr. Cyril Alfred Roberts has been appointed a member of the board. He has worked with the coal industry since nationalization, joining the headquarters staff in October, 1946, as departmental secretary of the manpower and welfare department. He became principal co-ordination officer the following year and succeeded Sir Herbert Hutchinson as secretary four years later. Since its formation in 1958, Mr. Roberts has been one of the nationalized industries' representatives on the Industrial Training Council. He represents the NCB on the Minister of Labour's National Joint Advisory Council.

Born in 1908 and educated at Eton and Trinity College, Cambridge, Mr. Roberts practised as a barrister in the Inner Temple from 1932 to 1939, specializing in commercial work. On the outbreak of war he joined HM Forces, serving in France and in the Western Desert on the staff of the Seventh Armoured Division and of the Eighth Army. He was an instructor in administrative subjects at the Staff College, Haifa, during 1943 and subsequently served on the Army Council Secretariat at the War Office. In 1945 he was appointed Brigadier A.G. (Co-ordination).

He was created MBE in 1944 and made a Commander of the Order in 1947. He was twice mentioned in despatches.

# THE COAL TRADE

SOLID fuel was well to the fore over the Christmas holiday and merchants have received quite a fair number of orders this week. Deliveries of most grades can be made promptly, but some merchants report that their yards are somewhat congested owing to heavy demands having been made for immediate despatch. Consumption of industrial fuel is, of course, always affected by the Christmas and New Year holidays, but as soon as the latter have passed a brisk resumption of activity is expected.

### SOUTH-WEST LANCASHIRE

The Christmas period passed without any dislocation of transport or supplies. Business proceeded normally up to Christmas Eve, with a few extra orders, but the pressure was not such as to cause any real difficulty to the trade.

Good supplies are flowing through from the collieries to the depots and, although the weather has been a little colder, business remains steady, with no semblance of urgency. Supplies of all qualities of house coal are good, but "Coalite" is beginning to be somewhat slower in delivery. Orders for this fuel are increasing steadily. Anthracite nuts are a difficult market as demand increases, but supplies remain slow in despatch. Deliveries of "Phurnacite" are, however, satisfactory so that there is no need for anyone with a slow-combustion stove to be without suitable fuel.

Gas coke and gas coke nuts continue to be plentiful, with large stocks on hand at most of the large gasworks. There is a steady demand for domestic purposes and a slightly increased demand for central heating, but there is no difficulty in supplying the full needs of customers promptly.

The general industrial demand continues to be satisfactory, although quite a number of works are closed this week for general overhauling purposes. The demand for steam-raising fuels, mostly for the small-sized varieties and graded hard and gas coke nuts, remains steady.

At the docks work slowed down over the Christmas period, but now there is a steady flow of both import and export business.

## Rubber Improvement's "Excellent Relations" With NCB

REVIEWING the present situation on Tuesday, Mr. John Lewis, chairman of Rubber Improvement, Limited, rubber and plastics manufacturers, of Wellingborough (Northants), said the company's relations with the National Coal Board both commercial and technical, were excellent and turnover with the board ran into seven figures. But in view of what was happening in the coal industry the total intake had gone down by many millions and everybody had had "a substantial cut."

It was in effect due to the drop in the NCB business that bank overdrafts had arisen. The Coal Board paid promptly, but business found elsewhere required extended credit. Referring to the dividend position, Mr. Lewis said that taking into account the present year when it had not been possible to recommend any distribution, the average distribution for the past four years had been 56 per cent.

Mr. E. E. Lambert, who is asking fellow shareholders in the company to support an application for a Board of Trade inspection of the company, gave the meeting no specific reasons for his action.

## *Coal Chartering*

GENERALLY speaking, the American coal market is rather quiet, although further tonnage has been taken for Japan—14,000 tons for February at $8.25, with interest maintained. Business has also been reported (relet cargoes) from the Roads to Antwerp, Rotterdam, or Amsterdam at 27s. 6d. for an 11,000-tonner, late December, which appears to be, from a charterers' point of view, quite a reasonable fixture. Hampton Roads/Yugoslavia has arranged 20,000 tons for December at $6.50.

There is some inquiry for west Italian discharge for forward loading.

Poland/west Italy has paid 29s. for 9,000 tons, December, and there are reports of Emden/Savona having been fixed at the somewhat low rate of 19s. for prompt shipment, while from Gdynia or Gdansk a 9,000-tonner has been taken for Greece at 38s., basis Piraeus discharge.

There is a good demand for tonnage to load fertilisers from the Continent to Indian ports and a 10,000-tonner has been fixed from Venice or Porto Marghera to Alexandria at 24s., f.i.o.s., and the rate to China from Antwerp-Hamburg Range is reported at 63s. 6d. basis north or 65s. 6d. basis south.

Tonnage is still required from the UK ports to the Mediterranean area, but there is no particular volume quoting.

There is, however, still quite an interest from east coast ports to Scandinavia.

## *Law Report*

### BANNED FOR LIFE

"I HAVE no idea how the cigarette came to be there. Everyone knows I am not the sort of chap that would try to smuggle a cigarette into the pit," said 29-year-old Noel Brooks at Blaydon Magistrates' Court. He was fined £2 and has been banned for life from working in the mines. Brooks, who is now a railwayman, was summoned for having a cigarette in his pocket as he was about to go into Emma Colliery, Ryton (Co. Durham).

Mr. Robert Moffit, a deputy overman, who made the search, said: "No one was more surprised than I was to find a cigarette on Brooks. He seemed even more surprised. He is the best workman that I have ever had and I have had hundreds through my hands."

THE CEMENTATION COMPANY, LIMITED, group of companies is to build and equip a £3,500,000 luxury hotel near Teheran for the Pahlavi Foundation. The tower block rising some 220 ft. above the hotel floor will make it one of the world's tallest buildings to be constructed in an earthquake zone.

# *US Steel Imports Exceed Exports*

IMPORTS of steel products into the United States during 1959 exceeded exports for the first time. Announcing this in Washington, the Department of Commerce stated that the final imports figure was expected to reach about 4,000,000 tons, which would exceed by 1,800,000 tons the previous record set in 1951. In 1958, US exports exceeded imports by 1,000,000 tons and in the previous year by 4,000,000 tons. Western Germany and Japan have been the main suppliers of steel to the United States during the past year, lesser tonnages coming from Britain and Canada.

Negotiations in the steel dispute were resumed on Sunday. Just before Christmas Mr. David McDonald, president of the United Steel Workers' Union, announced that union members were voting overwhelmingly for rejection of the employers' latest offer. On Sunday, when representatives of the 11 principal steel companies and the union met in Washington for company-by-company negotiations, it was quickly made evident that neither side expected much to come from these meetings, and on the following day Dr. George Taylor, chairman of the Government fact-finding board, said that he saw little possibility of a settlement before January 6. This is the date on which the board will report on the position of both sides and the efforts at agreement before the steelworkers vote on the management's latest offer. The board is now holding public hearings.

If the workers reject the offer the union will be free to resume the strike on January 26, when the 80-day injunction expires.

Steel production in the US this week is estimated by the American Iron and Steel Institute at 2,687,000 tons, compared with 2,641,000 tons last week and 2,058,000 tons in the corresponding week a year ago. The ingot index is 167.3 per cent., compared with 164.4 per cent. last week and 128.1 per cent. last year. This week's estimated output in terms of January 1, 1959, capacity of 147,633,670 tons is 94.9 per cent., compared with last week's 93.3 per cent.

# Distington Ironfoundry's Outstanding Record

BY producing 2,423 tons of finished castings during the week ended December 19, the ironfoundry of the Distington Engineering Company, Limited, a subsidiary of the United Steel Companies, Limited, has set up a new works, national, and European record for one week's output from one ironfoundry. The castings produced consisted of 379 ingot moulds, in addition to a number of bottom plates, slag ladles, and general engineering castings.

This achievement follows that of three previous weeks in each of which output exceeded 2,000 tons. Distington's ironfoundry is working a 17-shift week and the commissioning of a second hot-blast cupola, with continuous tapping, allows a full week for furnace maintenance, as one furnace at a time is proving sufficient to meet all the iron required for a week's production.

The company's management states that the foundry order-book is very satisfactory and there is every confidence that the large demand which this record output reflects will continue well into 1960.

# Firth Cleveland to Acquire Solartron Group

CONTROLLING interest in the Solartron Electronic Group, Limited, designers and manufacturers of electronic and scientific instruments, of Thames Ditton (Surrey), is to be acquired by the Firth Cleveland Holding & Investment Company, Limited, one of the largest and most rapidly expanding British industrial holding companies.

According to the terms announced on Tuesday, Firth Cleveland will subscribe for 300,000 new ordinary shares of 10s. each at £3 per share, to raise £900,000, and will acquire from existing holders 125,000 ordinary 10s. shares, the consideration per Solartron share being at the option of the holders, either £3 in cash or the allotment of two Firth Cleveland 4s. ordinary shares. The value of the offer could amount to just under £1,500,000. After the acquisition Firth Cleveland will hold 53,125 per cent. of the Solartron issued ordinary capital of 800,000 shares. Firth Cleveland has undertaken to make a further offer on or before July 31, 1961, for the Solartron ordinary shares not owned by it.

Solartron's long-term expansion programme has required a steadily increasing amount of new finance each year—research expenditure absorbs about 15 per cent. of the value of sales—and the directors decided some time ago that a sum approaching £1,000,000 should be raised immediately. The introduction at this stage of an industrial partner who could provide not only the finance, but also trading benefits, was considered the best way of raising the money.

It is proposed that Mr. Charles Hayward, chairman of Firth Cleveland, and Mr. Gordon Harries, its secretary, be appointed to the Solartron board, and Mr. Hayward has agreed to accept the chairmanship of the board, with Mr. John Bolton, the present chairman, as deputy chairman. An extra-ordinary meeting of the Solartron Electronic Group will be held on January 14.

# *United Steel in India and Pakistan*

CHANGES in the managements of its Indian and Pakistani companies are announced by the United Steel Companies, Limited. Mr. J. P. Jessop, manager of the United Steel Companies (Pakistan), Limited, has been appointed managing director in succession to Mr. L. L. Boyd, who is returning to this country to become deputy commercial manager of the Steel, Peech & Tozer branch of United Steel.

Mr. R. M. Marshall, who has spent several years with the United Steel Companies (India), Private, Limited, and who is at present completing a two-year course at the Harvard University Graduate School of Business Administration, will succeed Mr. Boyd as managing director of the Indian company. Mr. Marshall will not be available to take up this appointment until September/October, 1960, and in the interim period from mid-February, Mr. S. B. Wagh, a director and secretary of the Indian company, will be responsible for the duties connected with the post. Mr. S. Kumar will be in charge of sales in Bombay and Mr. G. Hill in Calcutta, both responsible to Mr. Wagh.

ACCORDING TO the Warsaw newspaper, Trybuna Ludu, the Polish steel industry produced 6,000,000 tons of crude steel in 1959. Production in 1958 was 5,600,000 tons.

*Orders Placed*

# GEC Signs Power Station Contract with Japan

AFTER nearly two years of negotiations, the Japan Atomic Power Company has signed a contract with the General Electric Company, Limited, for the construction of a 150-mW improved Calder Hall type nuclear power station at Tokaimura, 70 miles north of Tokyo. Total construction costs are expected to be in the region of £35,000,000 and the value to Britain of the contract is nearly £20,000,000. The work will be carried out by the consortium formed by GEC and Simon-Carves, Limited, Stockport (Ches).

A start is to be made on ground-clearing operations in the near future and work is expected to finish in 1964. The contractors have incorporated special earthquake-proofing devices in the design and also special safety improvements at Japanese request. The General Electric Company is supplying the reactor and all the generating equipment, which is to be built to meet high steam conditions not familiar in Japan. About 60 engineers will be sent out from Britain to direct and supervise the building work.

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FOR THE FIRST time in its history, William Gray & Company, Limited, West Hartlepool, is to build barges. An order for two 145-ft. barges for river transport of petrol and dry cargo in Nigeria has been placed by Holts Transport, Limited. The vessels will be delivered in April.

THREE 10,000-TON cargo vessels have been ordered from Swan, Hunter, & Wigham Richardson, Limited, Wallsend-on-Tyne, by the Clan Line. The ships are for delivery in 1961 and they will be powered by Sulzer diesel engines supplied by the Wallsend Slipway & Engineering Company, Limited.

CLAIMED TO BE the most powerful of their kind ever supplied to Russia, three hydraulic dynamometers worth about £75,000 have been ordered from Heenan & Froude, Limited, Worcester, by the Soviet Union and Poland. They will be used for absorbing and measuring the brake-horsepower of engines undergoing test.

VALUED AT more than £1,000,000, an order for a 19,000-ton bulk-carrier has been placed with Short Bros., Limited, Sunderland, by Sverre Ditlev-Simonsen, Oslo. She will be 525 ft. in length, with a breadth of 70 ft., and will be powered by a six-cylinder Harland B. & W. engine supplied by John G. Kincaid & Company, Limited, Greenock.

TURBO-GENERATING PLANT for power stations of the North of Scotland Hydro-Electric Board has been ordered from the Harland Engineering Company, Limited, Alloa, and the heavy plant division of Associated Electrical Industries, Limited. The Alloa firm is to supply five Francis turbines and some associated equipment worth about £288,000. AEI is to provide a generator of 15,000 kW and another of 6,000 kW.

ANOTHER RUSSIAN order for the supply of beet sugar plant has been obtained by Vickers & Bookers, Limited, the joint company recently formed for developing sales of such machinery to Russia, China, and other eastern European and Far Eastern countries. The new order is worth about £8,000,000 and follows a £500,000 order placed earlier in December. Equipment will be supplied for two factories, one in the Moscow area and one in the Ukraine.

WORK ON EIGHT rectifier transformers for the Harwell establishment of the Atomic Energy Authority will begin shortly at the Edinburgh works of Bruce Peebles & Company, Limited. Special low-frequency power supply equipment for the control rod system of the north Wales nuclear power station has also been ordered from the company. Under a new agreement Bruce Peebles will manufacture under licence from an American concern electronic pipe-finding leak-detecting equipment.

TWO VESSELS VALUED at about £2,000,000 have been ordered from Austin & Pickersgill, Limited, Sunderland. One is a bulk-carrier of 10,000 tons d.w., specially designed for carrying sugar for Booker Bros. (Liverpool), Limited. Propulsion will be by a Clark-Sulzer engine of 4,500 b.h.p. constructed and installed by George Clark & North Eastern Marine (Sunderland), Limited. The second order is for an ore carrier of 18,000 tons d.w. to be delivered in 1961. The name of the owner has not been disclosed.

WORTH NEARLY £2,000,000, two orders have been secured by Hick, Hargreaves & Company, Limited, Bolton, for equipment for two new power stations. The company will provide the complete condensing and feed-heating equipment for one of the world's largest and most advanced turbo-generators at Thorpe Marsh power station, near Doncaster. The second order is for the condensing plant for the two turbo-generators at the new Drakelow power station. Work on the contracts is expected to begin in 1962.

IN THE FINAL STAGES of a modernization scheme which has enabled it to speed up production and cut costs, Joseph L. Thompson & Sons, Limited, Sunderland, has received orders worth more than £1,500,000 for the construction of four new vessels. The contracts are for a 15,000-tons d.w. bulk-carrier for Norwegian owners, with propelling machinery by the North Eastern Marine Engineering Company, Limited, Wallsend, a coastal tanker for the Esso Petroleum Company, Limited, with English Electric propulsion machinery, and two diesel tugs for the Clyde Shipping Company, Limited.

A CONTRACT to the value of just over £500,000 for the design, manufacture, and erection of wagon marshalling and unloading equipment for ore, coke, and coal at the new Spencer steel strip mill, Newport (Mon), has been awarded to Strachan & Henshaw, Limited, Bristol, by Richard Thomas & Baldwins, Limited. The equipment will comprise four 50-ton wagon tipplers with automatic weighbridges and dust-suppression equipment, together with beetles and hydrabrakes for remote control of marshalling operations necessary to handle all incoming raw materials. The first stage will be put into operation by June, 1960, and the remainder will be ready 12 months later.

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## HUMBER COAL EXPORTS STILL FALLING

LOWER tonnages of coal, coke, and patent fuel were shipped from the Humber ports during November. In the four weeks ended November 29 Hull exported 22,597 tons, compared with 25,534 tons in the corresponding four weeks of 1958. Grimsby shipped only 28,554 (59,067) tons, Immingham, 64,266 (131,370) tons, and Goole, 97,150 (135,506) tons.

Shipments in the first 48 weeks of 1959 were also down on the corresponding period of 1958. Figures for the four ports (with the previous year's corresponding figures in parentheses) are as follow:—Hull, 285,018 (956,782) tons; Grimsby, 359,672 (812,271) tons; Immingham, 1,169,984 (1,713,158) tons; Goole, 1,567,692 (1,632,331) tons.

# *ECSC Coal Market Suspended*

TO deal with the Belgian coal crisis, the common market in coal among the six countries of the European Coal and Steel Community will cease, temporarily, this weekend. The Belgian coal market will be cut off from the rest of the ECSC and become instead a preferential trading area. Coal will not be free to move unhindered across the internal frontiers of the Community, but will be subject to a series of quota provisions.

Complete crisis powers have been assumed by the High Authority of the ECSC, which has issued its directives to the six member Governments in the form of decisions and recommendations which have binding force. The Belgian Government is now required to license imports of 3,550,000 tons during 1960, of which it is stipulated that 2,950,000 tons shall come from ECSC countries, each country being on a quota basis. Of the small quota of 600,000 tons from outside the ECSC, Britain is likely to get about 180,000 tons, or about one third of the 1954-57 average. Belgian exports to other ECSC countries are limited and pithead stocks are to be partly frozen at their present level.

Belgian Minister of Economics, M. van der Schueren, said recently that some 84 per cent. of the mineworkers made redundant by pit closures in 1959 have already been found fresh jobs. Loss of output capacity resulting from the year's closures was 2,400,000 tons.

Because of growing pithead stocks, France is to cut coal imports from ECSC countries in 1960. This will not affect countries outside the Community because all practical economic cuts have already been made. Coal imports are estimated to have fallen from 5,000,000 tons in 1958 to a little over 2,300,000 tons in 1959.

In the second week in December there was a marked increase in West Germany's coal output. Hard coal production reached 3,021,600 tons, compared with 2,544,700 tons the previous week and 2,713,300 tons in the corresponding week in 1958. Coke production also rose sharply to 674,900 tons.

Estimates for the total coal production in ECSC countries in 1959 reflect the coal glut crisis. Compared with 1958, last year's coal production is likely to show a 5 per cent. drop—to 234,000,000 tons, compared with 246,400,000 tons in 1958.

## Northumberland Area General Manager's Assurance

ASSURANCE that the reorganization of the Rising Sun Colliery, Wallsend, would mean that miners in the district would be provided with certain employment for many years to come was given by Mr. E. W. Potts, Area general manager of the Southern Northumberland Area of the Northern (N&C) Divisional Coal Board, speaking at the Miners' Lodge Christmas treat for retired miners. The scheme would be completed in a few months, he said. No. 2 pit would start to use the new shaft on January 31 and No. 1 pit at the beginning of March.

Mr. Potts said it was hoped that by the end of 1960 the 2,000 tons daily average would be raised to 3,000 tons to make the Rising Sun one of the leading collieries in the country.

TELEPHONE NUMBER of Electropol Processing, Limited, Farnham (Surrey), is now Farnham 3355.

# British Railways Blamed for Loss of Coal

BRITISH RAILWAYS was blamed on Monday for an acute shortage of coal wagons which was affecting miners' wages. Mr. Alwyn Machen, president of the Yorkshire Area of the NUM, said at a meeting of officials of the North-Eastern Divisional Coal Board and the NUM at Doncaster that the shortage of wagons had already resulted in the loss of 185,000 tons of coal, mainly in the Rotherham and Castleford Areas. He claimed that men at some pits had been taken off work at the face to empty wagons.

Later an official spokesman of the Coal Board said that there had been the closest co-operation with British Railways. But for "hour-by-hour, day-by-day" appraisal and liaison the position could have been much worse. The railways seemed to have done reasonably well in difficult circumstances.

For British Railways it was stated on Tuesday that if wagons had been filled and—according to Mr. Machen—taken a short distance and emptied on to the collieries' stocking grounds, then it was because they bore no destination labels. A "temporary" shortage of wagons was admitted, but it was stated that wagon repair works at Doncaster, Ranskill, and elsewhere were working overtime to get damaged wagons back into circulation.

The situation was further clarified by the Divisional Coal Board which explained that in some cases where collieries had not known when to expect a train of empty wagons, those already at the pits had had to be used for shuttling coal from the screens to dumping grounds and they would then be loaded again and labelled for destination.

Nottinghamshire NUM officials who complained that in one week alone 41,000 tons of coal had to be put into stock in the Nottinghamshire coalfield because of the shortage of wagons were told by British Railways that it was "the miners' own fault." They were bringing up extra coal to win bigger bonuses for Christmas and the railways could not cope with the rush. The problem was worse than ever this year because the miners were working a full week and putting in overtime. Even if the Coal Board had warned the railways in advance of the likely extra spurt they could not have carried the coal away because they had not got the wagons to deal with it.

## OPEN-CAST COAL SITE DEATH

WHEN a 13-ton jib he was repairing collapsed, a 26-year-old blacksmith, Mr. William James Donaldson, was crushed to death, an Ayr inquest was told last week. The accident took place at the Burnstone open-cast coal mining site, New Cumnock, on September 23.

It was stated that Mr. Donaldson was repairing a crack in the metal at a point where two sections of the jib were bolted together. The end of the jib was resting on the ground, but the remaining length was between 4 ft. and 5 ft. above the ground. No supports were placed under the jib and in order to weld the crack Mr. Donaldson had to remove a number of bolts holding the two sections together.

Witnesses agreed that had the jib been supported or if Mr. Donaldson had adopted a different method of repairing it, the accident might not have happened.

The jury returned a formal verdict.

*Board Changes*

# Appointments in the Foseco Group

MR. E. WEISS, managing director of FOUNDRY SERVICES INTERNATIONAL, LIMITED, Birmingham, has been appointed chairman of the company. Mr. A. Olof Grundberg, who has been appointed deputy managing director, has resigned his former position as managing director of SANDVIK SWEDISH STEELS, LIMITED, Halesowen. His successor in that appointment is Mr. B. Rosén, who was previously assistant managing director and sales manager of Svenska Metallverkens Ugns A.B. Västeras, Sweden.

Mr. P. D. Norman, works manager of FOUNDRY SERVICES, LIMITED, has been appointed a director of that company.

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BURCO DEAN, LIMITED—Mr. O. Dukler has resigned from the board.

BARLOW & CHIDLAW, LIMITED—Mr. J. McCulloch has resigned from the board.

MINERALS SEPARATION, LIMITED—Mr. J. A. Metcalfe has been appointed a director.

STEETLEY COMPANY, LIMITED—Mr. C. H. T. Williams has been appointed a director.

BUTTONS, LIMITED—Mr. C. L. Walker and Mr. A. Drummond have been appointed to the board.

S. HUBBARD, LIMITED—Mr. S. C. Hyslop has resigned from the boards of the company and its subsidiaries.

BRITISH THOMSON-HOUSTON COMPANY, LIMITED—Mr. E. S. Little has retired from the board of the company and certain associates.

LAPORTE INDUSTRIES, LIMITED—Mr. H. E. Farmer, who has been appointed a director, will remain secretary of the company.

GLENFIELD & KENNEDY, LIMITED—Mr. John H. Lawrence, Mr. Donald A. S. MacLellan, Mr. James C. Robertson, and Mr. James G. Workman have been appointed to the board.

PRIESTMAN BROS., LIMITED—Mr. Sydney H. Priestman has been elected president on his retirement as chairman. Mr. Phillip D. Priestman has been appointed chairman and managing director.

AUTOMOTIVE PRODUCTS COMPANY, LIMITED—Mr. E. Beaumont and Mr. S. M. Parker have been appointed deputy managing directors of the Automotive Products groups in addition to Mr. A. C. Burdon.

BRITISH ALUMINIUM COMPANY, LIMITED—Sir Geoffrey Crowther has been appointed a director. He was editor of The Economist from 1938 to 1956 and is now deputy chairman of The Economist Newspaper, Limited.

UNIVERSAL GRINDING WHEEL COMPANY, LIMITED—Mr. Michael G. H. Brown has been elected chairman in place of Sir Samuel Beale, who left the chair after the annual meeting, but will continue as a director.

UNITED FLEXIBLE METALLIC TUBING COMPANY, LIMITED—Mr. L. J. Kellond has been appointed to succeed Mr. H. W. Bingley as managing director. Mr. Bingley will retain the chairmanship of the company.

MARIS EXPORT & TRADING COMPANY, LIMITED—Mr. Alan Anderson, hitherto a local director at Newcastle, has been appointed a full director of the company and will continue to operate from the Newcastle office.

WILLEN KEY & HARDWARE COMPANY, LIMITED—Mr. Robert Allen has been appointed joint managing director of the company, a subsidiary of Parker, Winder & Achurch, Limited, in place of Mr. David Harris, who has retired from the board.

FOSTER WHEELER, LIMITED—Mr. G. H. Hopewell has been appointed deputy chairman and has resigned as managing director. Mr. C. E. H. Verity has been appointed managing director and Mr. R. B. Kerr is now deputy managing director.

VICKERS-ARMSTRONGS (ENGINEERS), LIMITED—Mr. A. E. Reddell has been appointed a director and to the office of director-in-charge, Weymouth Works. Mr. F. A. E. Pritchard has been appointed a special director and to the office of general manager, Weymouth Works.

BARTON & SONS, LIMITED—Mr. C. A. Roper and Mr. Arthur Prichards have been appointed joint managing directors. Mr. Roper's post of secretary has been taken over by Mr. N. T. Canadine. Mr. Harry Prichards has relinquished his position as managing director, but remains chairman.

WOODALL-DUCKHAM CONSTRUCTION COMPANY, LIMITED—Mr. H. Kerr, director-in-charge of the company's operating department, has retired from that appointment and also from the board. Mr. Kerr joined the staff of the company in 1929 and throughout his service has been associated with plant operation. He held the position of head of the operating department for the past 20 years and joined the board in 1949.

WILKES BERGER ENGINEERING COMPANY, LIMITED—As a result of the acquisition by Union Corporation, Limited, and Bay Hall Trust, Limited, of approximately 51 per cent. of the ordinary shares of the company, Mr. R. H. McWilliam, Mr. M. H. Spieler, and Mr. T. Sharpe have joined the board. Mr. McWilliam has been appointed chairman in place of Mr. M. M. Berger, who has relinquished the post in order to enable him to concentrate on his duties as joint managing director with Mr. A. R. Beishon. Mr. B. L. B. Hutchings has resigned as a director of the company.

WM. HAMILTON & COMPANY, LIMITED—Mr. Ambrose Hunter has joined the company as managing director as from February 14. He is at present managing director of Cook, Welton & Gemmell, Limited, Beverley (Yorks). He was formerly associated with the Ayrshire Dockyard Company, Limited, Harland & Wolff, Limited, Woolwich, the Ministry of Transport as ship surveyor at London and Leith, the Merchant Shipbuilding and Repairs Department, Admiralty, Wm. Gray & Company, Limited, West Hartlepool, and the Shipbuilding Corporation, Limited, Wear branch.

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# *Transmission Engineers' Need to Cut Costs*

PROSPECT before the Marfleet, Hull, power transmission engineers, J. H. Fenner & Company (Holdings), Limited, is "a good one," state the chairman, Mr. C. Bradshaw, and managing director and deputy chairman, Mr. S. B. Hainsworth. General trade liberalization, however, will mean that the group must improve in cost cutting and in general efficiency, earning lower margins per piece, modest as these are in most cases.

It is planned to make extensions to the Hull factory during 1959-60 and over the next four years very substantial sums of capital will be required to finance the expansion and development of new sections planned and, in some cases, already begun. Consolidated net profits for the year ended August 31, 1959, amounted to £236,970 (£226,055). As already announced, the dividend is raised by the equivalent of 5 per cent. to 15 per cent.

# News in Brief

MODERNIZATION of its foundry is planned by Blackett, Hutton & Company, Limited, Guisborough (Yorks), and a new fettling shop is being built.

ONE OF Blackpool's biggest sea-front restaurants, the Savoy Café, has been acquired by Highland Engineering, Limited, Edinburgh, for about £275,000. The company plans to develop the site.

EAST GERMANY has offered to sign an agreement with the Federal German Republic to purchase rolled steel products over a period of five or 10 years, if the Federal Government liberalizes certain Eastern quotas.

IT IS ANNOUNCED from The Hague that Prince Bernhard is to resign from a number of undertakings because of pressure of other work. The appointments concerned include membership of the board of the Coal Trading Association.

AS FROM today (Friday), all household coal qualities from the Ruhr are to be cheaper by between 1s. 2d. and 7s. 3d. per metric ton. Biggest price drop—DM 4.25—is for household coke qualities. No alteration is to be made in the price of furnace coke.

A COLOURED personnel officer to look after the interests of the company's 200 West Indian workers has been appointed by Bilston Foundries, Limited Bilston (Staffs). He is Mr. Mervin Denton Ishmael, a graduate in industrial relations and social science at the London School of Economics.

A SUBSIDIARY of Metal Industries, Limited, the Hughes Bolckow Shipbreaking Company, Limited, Blyth (Northumberland), has changed its name to Hughes Bolckow, Limited. This gives recognition to the fact that, although its main activity is still in shipbreaking, the company now has other interests, notably in engineering.

DEMAG, the West German engineers and machinery manufacturers, has concluded negotiations with the United Arab Republic to exploit three mineral ore areas in Egypt. The areas are one near Bogma where manganese ore has been discovered, and two ilminite deposits, one near Abu-Ghalaga, 15 miles from the Red Sea and the other in the eastern desert near Hamash.

THE DISMISSAL of 200 employees at the Kilmarnock farm machinery works of Massey-Ferguson, Limited, has been postponed to enable the management to consider proposals made by the unions concerned. These include a suggestion that the workers under notice should be retained and other workers put on short time. The management is also considering transferring work from other factories.

FOLLOWING THE TERMINATION of the contract of Samuel Butler & Company, Limited, Leeds, for the erection of structural steelwork on the new £1,750,000 Barton high-level bridge over the Manchester Ship Canal, it was announced on Christmas Eve that the work would be taken over by the United Steel Structural Company, Limited (branch of the United Steel Companies, Limited), Scunthorpe (Lincs).

PLAN TO CONVERT Middlesbrough into a smoke-control area over the next 20 years has been approved by the corporation's Sanitary and Baths Committee. It will mean that fireplaces in 44,000 houses will have to be converted for smokeless fuel, and industry, where possible, will have to use smokeless fuel. It has been estimated that in the worst part of the town 400 tons of soot per square mile falls every year.

PANTAK, LIMITED, Windsor (Berks), has concluded an agreement with Usines Balteau, Liège, for the marketing in the UK of two ranges of lightweight portable industrial X-ray equipment. This equipment will consist of two oil-insulated units of 140 and 200 kV capacity and three gas-insulated units of 150, 180, and 300 kV capacity. The 180-kV unit is specially developed for the examination of circumferential welds, etc.

THE WAGON REPAIR works of British Railways at West Hartlepool which were to have closed at Christmas have been granted a further reprieve. Originally it was reported that the works were to be closed last June as part of British Railways' economy programme, but following representations by the National Union of Railwaymen the closing-down was postponed for six months.

THE LONDON OFFICE of the British Welding Research Association is now at 19, Fitzroy Square, W.1 (telephone: EUSton 9595/6). The office will contain the committee meeting room, membership and liaison staff, and secretarial and accounts staff. The research sections, research committee secretariat, design advisory service, library, and publications section are at Abington Hall, Abington, Cambridge (telephone: Linton 375 and 388).

IN ITS THIRD four-year plan—from 1961 to 1964—the Nationalist Chinese Government has decided to concentrate on development of heavy industry. The plan foresees the building of a steelworks on Formosa with an annual production of 200,000 metric tons of raw steel. This would more than double the present output of the Formosan steel industry. Negotiations for the erection of the plant are understood to have already begun with US and Japanese firms.

FOUNDATION STONE of a three-storey technical research building for Pollard Bearings, Limited, Ferrybridge (Yorks), was laid on Tuesday by the daughter of Mr. John L. King, the managing director. Mr. E. G. Jones, the company's technical manager, said that the company was hoping to adapt the cold-forming process to production of bearing rings. This would mean that they could be produced up to 60 times as fast as present techniques allowed, he said.

UNDER AN AGREEMENT with the American Machine & Foundry Company, Henry Simon, Limited, Stockport, will market AMF bakery equipment in the UK, Eire, South Africa, and Rhodesia. The company's South African subsidiary, Simon-MacForman, Limited, Johannesburg, will market the equipment in the Union and Rhodesia. AMF Sterling, a company recently formed by AMF and Sterling Industries, Pty., will market Henry Simon's bulk flour handling equipment in Australia.

## ECSC Treaty Revision Rejected

IT has been officially announced that the Court of Justice of the European Communities (the Common Market, Euratom, and the ECSC) has rejected proposals to revise the ECSC treaty. The proposals made by the Ministerial Council and the High Authority of the ECSC would have extended the powers of the High Authority to grant financial aid for re-employment of miners made redundant by the present state of the coal-mining industry and the measures taken to relieve the situation.

Under the treaty the powers will end on February 10, 1960, and an extension for three years was sought.

The court's decision is considered of considerable political and economic importance as the reorganization of the Belgian and West German coal industries depended to a large extent on ECSC financial aid.

It is believed that the High Authority will now seek a compromise which will avoid a modification of the treaty.

# *Distributed Coal Stocks Too Low*

TOTAL distributed coal stocks are now at a lower level than at any time since 1950. The Ministry of Power, pointing out that some individual consumers appear to have dropped below the "safety" level, warns against placing too much reliance on pithead stocks. Even where such stocks are of the right grade and quality, they represent no security if the weather impedes the movement of coal. Nor can they be regarded as an effective substitute for reasonable stocks of normal quality held on consumers' premises.

In the week ended December 19 distributed stocks were down to 15,355,000 tons, compared with 18,124,000 tons a year ago. Undistributed stocks dropped slightly to 36,445,000 tons. Consumption continues to increase and by December 19 was up to 4,553,000 tons, compared with production of 4,400,800 tons.

The Christmas holiday resulted in a drop in output to 2,637,400 tons.

There were 641,100 wage-earners on colliery books on December 19, against 687,900 on December 20, 1958, the numbers engaged at the coal face being 247,700 and 270,600, respectively. Total absenteeism (all workers) in the week ended December 19, was 10.72 per cent., compared with 11.75 per cent. in the week ended December 20, 1958. Output at the face was 3.867 tons and overall 1.388 in the week ended December 19, compared with 3.642 and 1.343 in the week ended December 20, 1958.

The following table gives (in tons) the output of saleable mined coal by division in the week ended December 26, and the tonnage lost through all causes (holidays, disputes, and go-slows):—

| Division. | Week ended December 26, 1959. | | Week ended December 27, 1958. |
|---|---|---|---|
| | Total output. | Tonnage lost. | Total output. |
| Scottish .. .. | 319,900 | 79,800 | 384,100 |
| Northern (N & C) .. | 198,700 | 58,000 | 193,700 |
| Durham .. .. | 361,800 | 119,000 | 343,200 |
| North-Eastern .. | 499,800 | 356,800 | 413,700 |
| North-Western .. | 167,600 | 109,400 | 174,200 |
| East Midlands .. | 541,700 | 345,000 | 467,900 |
| West Midlands .. | 186,800 | 132,100 | 179,500 |
| South-Western .. | 245,600 | 177,700 | 266,900 |
| South-Eastern .. | 18,300 | 13,300 | 12,300 |
| Great Britain— | | | |
| Deep-mined coal .. | 2,540,200 | 1,391,100 | 2,435,500 |
| Open-cast coal .. | 97,200 | — | 108,600 |
| TOTAL .. | 2,637,400 | 1,391,100 | 2,544,100 |

## Inquest on Scottish Miners

FORMAL verdict was returned by the jury at an Ayr inquest last week into the deaths of Mr. Archibald Neil (53) and Mr. David Park (25), who were killed by a fall of coal and stone from the face of No. 9 Trainee Section of Kames Colliery, Muirkirk (Ayrshire), on November 16. Mr. James Angus (38), a shotfirer, was on his way to the point where the two men should have been working. He saw an electric cable running under the fall and realized something was wrong. The two bodies were recovered from under the fall.

Colliery deputy, Mr. John Hazie (50), said that on his usual inspection on the early shift he found nothing wrong with the perpendicular face.

## Miners Agree to Transfer "Under Protest"

MINERS who are to be transferred at the end of January from Polmaise 3/4 Colliery, near Stirling, in the Scottish Division of the National Coal Board, to other pits in the district accepted the move under strong protest at a meeting on Saturday. Manpower at Polmaise will be cut by one third as the West Moss section is uneconomic and the reduction is proposed with the agreement of the NUM and the National Association of Colliery Overmen, Deputies, and Shotfirers.

Most of the men are to be transferred to Kinneil Colliery and the remainder will go to Glenochil and other development pits in the Alloa Area, which is one of the most progressive in the Division. It has the highest proportion of power-loading machinery in use.

A Coal Board spokesman said there was no question of closing down Polmaise as a large part of its production consisted of high-grade coking coal. Output would now be concentrated in the better parts of the pit.

Mr. Thomas McCue, the 41-year-old deputy who staged a one-day sitdown strike at Polmaise last week for being "placed on the redundancy list without reason," started in a new job as fireman at Manor Powis Colliery on Saturday The new job is a grade lower than his previous position. Mr. McCue wanted to know why, after 21 years at the pit, he had been declared redundant and told he was being transferred. When he returned to the surface after 20 hours he was dismissed on the spot and the Coal Board announced that it had lost confidence in his ability as a junior official. He was later offered the job at Manor Powis.

## ANOTHER "FOREST" COLLIERY CLOSES

ONE of the oldest coal-mining sites in the country —the Arthur and Edward Colliery in the Forest of Dean (Glos)—closed down during the Christmas holiday. Alternative employment is being found for the majority of the 200 men displaced, though Forest of Dean miners are more of a "closed community" than most and are reluctant to leave the locality.

Mining in the Forest goes back several hundred years when "free miners" were granted Royal Warrants to work small holdings of land. Mining has been carried on at or near the Arthur and Edward Colliery since the pit was opened by two brothers of those names at about the time of the Battle of Waterloo. There are now only three pits left in the Forest—Cannop, Northern United, and Princess Royal, the three employing between 1,200 and 1,300 men. The NCB does not expect more than one to be still in operation by 1965.

Reserves are becoming exhausted in the Area and the pits have been growing steadily more and more uneconomic. In 1957 they lost 31s. 11d. a ton, in 1958 about 20s. 11d., and in the first half of this year 17s. 4d. Losses over the half year worked out at about £120 per man.

DR. R. C. G. WILLIAMS, chief engineer of Philips Electrical, Limited, has been appointed to the board of the newly-created College of Technologists, set up under the auspices of the National Council for Technological Awards.

## *Changes of Name*

AMONG companies which have recently changed their names are those listed below. The new titles are given in parentheses.

YALLOP WEIGHBRIDGE COMPANY, LIMITED, Witham, Essex (Witham Weighbridge Company, Limited).

NORTH HYDE (COMPONENTS), LIMITED, 162, Uxbridge Road, London, W.13 (Elmwood Enamellers, Limited).

CITY ENGINEERING COMPANY (BOREHAMWOOD), LIMITED, 12, Buckingham Street, London, W.C.2 (Citenco, Limited).

S. & D. J. THEWLIS, LIMITED, ironfounders, etc., of Bottoms Foundry, Mossley, near Manchester (Bonova, Limited).

GILBERT & HUNT, LIMITED, manufacturers of gears, etc., of Nile Street, Huddersfield (Highfield Gears, Limited).

BRIGHT STEEL COMPANY (OLDBURY), LIMITED, Castle Street, Tipton, Staffs (Bright Steel Company (Tipton), Limited).

NEW WAY METAL PRODUCTS, LIMITED, 29, Museum Street, London, W.C.1 (New Way Packaged Products, Limited).

WARSTONE ENGINEERING COMPANY, LIMITED, Prince of Wales Lane, Warstock, Birmingham 14 (Elbief Company, Limited).

NORTON-HARTY ENGINEERING COMPANY, LIMITED, Central Works, Great Bridge, Tipton, Staffs (Norton-Harty (Holdings), Limited).

MICROMETRIC ENGINEERING COMPANY, LIMITED, 11, Underhill Street, Bridgnorth, Salop (Wilson, Pearson (Engineering), Limited).

VINCENT ENGINEERS (STEVENAGE), LIMITED, 3A, High Street, Great North Road, Stevenage, Herts (Fishers Green Vendors, Limited).

RESIDE & GREENWOOD, LIMITED, sheet-metal workers, etc., of Phoenix Street, Brighouse, Yorks (Reside (Pressings), Limited).

FYLDE VIBRATORY ROLLER COMPANY, LIMITED, 4, Park Field Road, Lytham St. Annes, Lancs (Fylde Vibratory Roller Hire Company, Limited).

S. H. HEYWOOD & COMPANY, LIMITED, mechanical engineers, of 1, Brooklands Road, Reddish, near Stockport (S.H.H. (Manchester), Limited).

## Sales Arrangements of Firth Cleveland Tools

MANUFACTURING and marketing arrangements for tools produced by the Firth Cleveland, Limited, group have been reorganized. The manufacture and marketing in the UK of Surform and Surcut surfacing and cutting tools will be transferred from Simmonds Aerocessories, Limited, to Firth Cleveland Tools, Limited. The home sales office continues at the group headquarters, Stornoway House, Cleveland Row, London, S.W.1.

Oversea sales will continue to be handled from the same address by Simmonds Aerocessories on behalf of Firth Cleveland Tools. Distribution in Sweden, Denmark, Holland, Belgium, Germany, and Italy will be the concern of Simmonds Aerocessories' subsidiaries in those countries. Simmonds Aerocessories, Pty., will continue to manufacture Surform and Surcut tools in Australia for the Australian market.

Sales to the garage trade and building industry will be handled by Stenor, Limited, and British Lead Mills, Limited, respectively, which will act as agents for Firth Cleveland Tools. The Surform trial offer scheme inaugurated by Simmonds Aerocessories will be continued by Firth Cleveland Tools.

As a result of the changes Mr. C. W. Clarke has been appointed general sales manager of the Surform division of Firth Cleveland Tools. Mr. E. Cragg has been appointed home sales manager of the Surform sales division.

THE 10,000-TON Great Lakes ore carrier, Westriver, has arrived at the wharf of the North Eastern Marine Engineering Company, Limited, Wallsend-on-Tyne, for engine repairs. She was towed across the Atlantic with only 16 of her crew on board, the rest having maintained that she was unseaworthy.

## *Machine-tool Orders Rise Sharply*

VALUE of new orders for machine tools placed with the UK industry, particularly in the home market, rose sharply in September. The total value of both home and export orders was over £10,000,000, an improvement of more than £4,000,000 on the previous month and shared equally between home and oversea business.

September was the second month running for an increase in the total order-book to be noted—from £49,280,000 to £52,490,000, compared with £59,160,000 a year earlier. During the same month deliveries also rose sharply—to £7,000,000—but this was partly a consequence of the resumption of work after the holidays. The net value of new orders for September—£7,744,000—was the highest for any month since November, 1954. The export order-book was increased by £1,000,000 to just over £15,000,000. Shipments to foreign markets amounted to £1,400,000.

On the whole, the pattern of present demand for machine tools conforms closely to the general features of manufacturing industry. The companies making refrigerators, cleaners, and other light-engineering products are supplying a substantial part of current orders, but the aircraft industry and most heavy industries are not yet in the market for new machines to any noticeable extent.

## E. V. Industrials and Future Prospects

CONFIDENCE in the future of the E.V. Industrials, Limited, group is expressed by the directors in their promised statement to shareholders. They have good reason to hope that combined earnings will support a total distribution of 1s. 3d. per share (25 per cent.) without drawing on the carry-forward. For the current year it is intended to pay a final of 9d. per share (15 per cent.). The profit prospect for 1960 is assessed at £400,000, before tax, out of which the board would recommend an ordinary dividend of not less than 1s. 6d. per share (30 per cent.).

Regarding the acquisition of the Westminster Construction Company, Limited, and H. & C. Davis & Company, Limited, it is announced that following further negotiations the purchase price was reduced from £850,000 to £700,000. Indemnities have been given against any shortfall in combined profits from a figure of £310,000 for the 12 months to June 30, 1960.

It is also announced that the proposed amalgamation with the Expert Tool & Case Hardening Company, Limited, through an exchange of shares will not now take place. Negotiations between the two boards have closed.

### *Problem of West German Steel Merger*

DECISION on the proposed merger of Phoenix-Rheinrohr, AG, and August-Thyssen Hütte, AG, a deal which would produce the largest single steel-producing unit in Europe, has been postponed by the High Authority of the European Coal and Steel Community until its meeting on Wednesday.

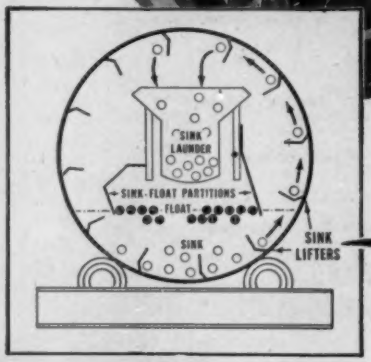
The combination of the two companies would represent about 5,000,000 tons of steel capacity, or about 8 per cent. of total ECSC production.

# In Heavy Medium Separation

Wemco Drum Separators are an important feature of the Wemco H.M.S. plant, which employs magnetite as the dense medium and incorporates magnetic recovery.

## YOU CAN'T BEAT THIS DRUM for hard wear

These exceptionally hard-wearing separating vessels are available as single compartment (two product) or two compartment (three product) drums. With their associated equipment they can be used to extend existing washeries or as part of new coal preparation plant.




## and this is why

The Wemco Drum Separator rotates as a unit. There are no moving parts inside, no chains, sprockets, screens, or scrapers, nothing to wear by abrasive action of coal or medium. Integral lifters collect the sink material gently, retaining it until it drops on to the sink launder at top centre. Should the drum shut down fully loaded there is no jamming or abrasive problem on start-up. The magnetite suspension is normally left in the drum between shifts.

**WEMCO** plant for heavy medium separation

## WEST'S [MANCHESTER] LTD

NORTON STREET · MILES PLATTING · MANCHESTER, 10

*TELEPHONE: COLLYHURST 2132* *GRAMS: WESTMAN, MANCHESTER, 10*

*ondon Office: Columbia House, Aldwych, W.C.2.* *Telephone: HOLborn 4108*

CL10

# *Imports and Exports of Iron and Steel*

FIGURES of imports and exports of iron and steel in November are given in the following tables, which are based on Board of Trade returns.

Totals for the first 11 months of last year and 1958 are also included.

### *Total Exports of Iron and Steel*

| Destination. | Month ended Nov.30. | Eleven months ended November 30. | |
|---|---|---|---|
| | 1959. | 1958. | 1959. |
| | Tons. | Tons. | Tons. |
| Cyprus | 184 | 5,042 | 1,523 |
| Sierra Leone | 175 | 11,311 | 8,718 |
| Ghana | 1,541 | 14,253 | 24,058 |
| Nigeria | 3,704 | 63,663 | 67,894 |
| Union of South Africa | 4,221 | 98,216 | 38,316 |
| Rhodesia and Nyasaland | 1,647 | 30,575 | 19,371 |
| Tanganyika | 1,160 | 13,798 | 17,808 |
| Kenya | 2,362 | 37,420 | 23,783 |
| Uganda | 190 | 2,885 | 3,905 |
| Mauritius | 179 | 3,188 | 1,599 |
| Aden | 125 | 2,677 | 2,833 |
| Bahrein, Qatar, and Trucial States | 1,212 | 8,583 | 7,769 |
| Kuwait | 375 | 37,461 | 9,528 |
| India | 24,434 | 134,801 | 191,676 |
| Pakistan | 4,755 | 50,138 | 41,106 |
| Singapore | 2,067 | 31,004 | 20,872 |
| Malaya | 974 | 14,463 | 9,573 |
| Ceylon | 1,278 | 28,550 | 34,124 |
| British North Borneo | 241 | 1,862 | 2,510 |
| Hongkong | 6,785 | 53,590 | 62,137 |
| Australia | 10,589 | 96,324 | 78,734 |
| New Zealand | 12,275 | 174,259 | 94,152 |
| Canada | 40,037 | 173,283 | 215,097 |
| Jamaica | 1,892 | 19,786 | 19,945 |
| Trinidad | 2,543 | 46,215 | 37,060 |
| British Guiana | 612 | 6,359 | 6,085 |
| Other Commonwealth countries | 3,917 | 42,441 | 33,970 |
| Eire | 5,397 | 44,808 | 45,279 |
| Soviet Union | 1,113 | 18,924 | 29,713 |
| Finland | 4,124 | 45,993 | 34,385 |
| Sweden | 13,612 | 111,337 | 117,625 |
| Norway | 11,219 | 85,068 | 89,277 |
| Denmark | 8,692 | 77,546 | 87,288 |
| Western Germany | 6,697 | 52,211 | 108,377 |
| Netherlands | 12,627 | 73,858 | 93,093 |
| Belgium | 2,134 | 36,660 | 33,082 |
| France | 244 | 3,978 | 5,285 |
| Switzerland | 569 | 8,650 | 7,882 |
| Portugal | 1,055 | 12,874 | 13,863 |
| Spain | 966 | 40,291 | 24,700 |
| Italy | 2,361 | 37,761 | 42,409 |
| Austria | 822 | 8,712 | 4,263 |
| Yugoslavia | 887 | 4,014 | 5,168 |
| Greece | 356 | 11,875 | 9,964 |
| Turkey | 36 | 4,093 | 4,746 |
| Netherlands Antilles | 136 | 1,961 | 3,091 |
| Portuguese East Africa | 117 | 2,501 | 1,368 |
| Egypt | 2,940 | 12,410 | 6,148 |
| Sudan | 407 | 31,479 | 6,508 |
| Lebanon | 216 | 8,644 | 3,270 |
| Israel | 462 | 8,194 | 12,774 |
| Saudi Arabia | 51 | 3,808 | 3,000 |
| Iraq | 4,178 | 37,937 | 73,084 |
| Iran | 3,652 | 36,764 | 36,086 |
| Burma | 480 | 10,933 | 8,062 |
| Thailand | 140 | 6,469 | 7,375 |
| Indonesia | 2,438 | 2,119 | 8,315 |
| Philippine Republic | 1,383 | 3,396 | 8,142 |
| USA | 21,274 | 79,915 | 180,552 |
| Cuba | 1,267 | 5,724 | 7,407 |
| Colombia | 1,198 | 5,147 | 4,903 |
| Venezuela | 3,032 | 60,507 | 61,460 |
| Ecuador | 48 | 2,235 | 896 |
| Peru | 502 | 9,503 | 2,725 |
| Chile | 127 | 4,699 | 1,363 |
| Uruguay | 253 | 848 | 1,745 |
| Argentina | 3,790 | 119,769 | 184,528 |
| Other foreign countries | 42,814 | 136,336 | 322,457 |
| TOTAL | 293,290 | 2,472,088 | 2,775,804 |

### *Total Imports of Iron and Steel*

| From | Month ended Nov. 30. | Eleven months ended November 30. | |
|---|---|---|---|
| | 1959. | 1958. | 1959. |
| | Tons. | Tons. | Tons. |
| Rhodesia and Nyasaland | 471 | 5,627 | 4,884 |
| Canada | 2,689 | 20,350 | 18,143 |
| Other Commonwealth countries and Eire | 6,710 | 20,529 | 38,520 |
| Soviet Union | 15,424 | 108,945 | 59,830 |
| Sweden | 2,891 | 31,971 | 27,840 |
| Norway | 10,065 | 64,514 | 81,359 |
| Poland | 511 | 319 | 4,673 |
| Western Germany | 7,304 | 62,782 | 70,188 |
| Netherlands | 16,754 | 136,559 | 151,380 |
| Belgium | 1,558 | 87,465 | 20,475 |
| Luxembourg | 687 | 6,007 | 6,223 |
| France | 3,599 | 17,503 | 22,029 |
| Italy | 706 | 7,026 | 12,334 |
| Austria | 302 | 3,770 | 3,778 |
| Japan | 229 | 3,151 | 2,237 |
| USA | 2,565 | 115,110 | 23,284 |
| Other foreign countries | 1,538 | 7,348 | 11,349 |
| TOTAL | 74,003 | 698,976 | 558,528 |
| Iron and steel scrap and waste, fit only for the recovery of metal | 174 | 62,864 | 2,677 |

### *Exports of Iron and Steel by Products*

| Product. | Month ended Nov. 30. | Eleven months ended November 30. | |
|---|---|---|---|
| | 1959. | 1958. | 1959. |
| | Tons. | Tons. | Tons. |
| Pig-iron | 7,422 | 134,991 | 125,878 |
| Ferro-columbium (niobium) | 7 | 34 | 62 |
| Ferro-tungsten | 119 | 804 | 1,119 |
| Other ferro-alloys | 1,800 | 3,296 | 9,002 |
| Ingots, blooms, billets, slabs, sheet bars (incl. tinplate bars), and similar primary forms | 3,136 | 16,503 | 74,748 |
| Pieces roughly shaped by forging* | 210 | 6,718 | 1,334 |
| Iron bars, rods, angles, shapes, and sections | 146 | 1,611 | 3,323 |
| Steel bars, rods, angles, sections, and shapes | 73,688 | 305,048 | 476,785 |
| Iron plates and sheets | 110 | 1,695 | 1,642 |
| Universal plates | 970 | 4,283 | 8,758 |
| Steel plates, 3mm. and under 4.5mm. thickness | 2,299 | 8,067 | 37,049 |
| Ditto, 4.5mm. or more in thickness | 26,282 | 160,092 | 197,160 |
| Blacksheets and blackplate | 28,230 | 264,520 | 259,182 |
| Hoop and strip | 6,677 | 71,882 | 76,030 |
| Tinplate | 33,770 | 364,282 | 423,177 |
| Decorated tinplate | 530 | 5,604 | 7,628 |
| Galvanized sheets | 5,071 | 77,345 | 76,982 |
| Other (incl. tinned sheets, terneplate, and ternesheets) | 2,406 | 12,484 | 19,842 |
| Railway and tramway construction material | 12,798 | 222,742 | 153,642 |
| Wire rods of steel (incl. alloy steel) | 4,277 | 45,351 | 45,428 |
| Wire | 10,843 | 93,672 | 99,685 |
| Tubes, pipes, and fittings | 72,499 | 671,064 | 677,348 |
| TOTAL | 293,290 | 2,472,088 | 2,775,804 |

* The figures for 1959 are not completely comparable with those for previous years.

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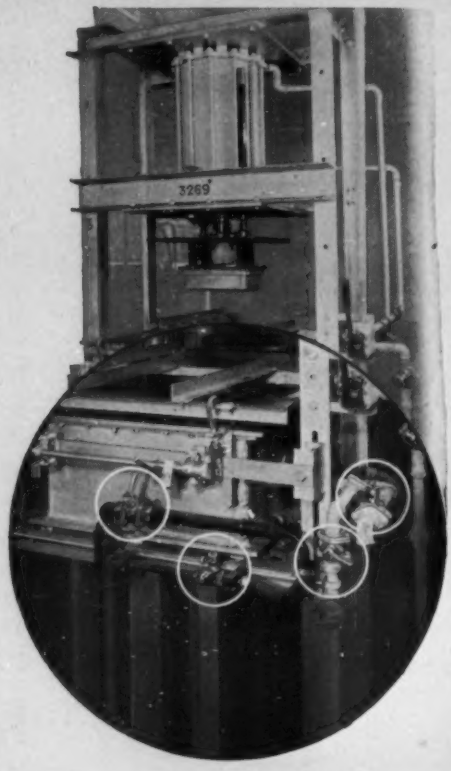
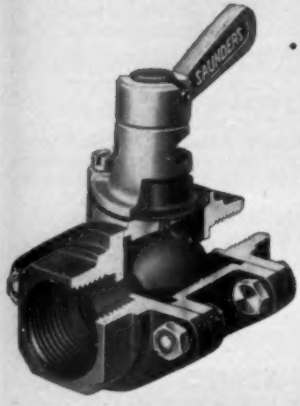
SIX SWITCHBOARDS, with an overall length of 264 ft., for the new plate mill of the Consett Iron Company, Limited, Consett (Co. Durham), are now in production at the Bedford works of Brookhirst Igranic, Limited, a member of the Metal Industries, Limited, group. Varying in wheel diameter from 8 in. to 23 in., 80 limit switches and 80 steel mill brakes are also being supplied. The equipment is valued at about £75,000.

# More about the SAUNDERS 'M' VALVE

Development continues — the size range extends until it now comprises 8 capacities from ½in. to 3in. Scope increases and here, in the illustration, is a Vacuum Forming Machine built by General Celluloid Co. Ltd., who have fitted these Spherical Plug Valves in the Vacuum and Compressed Air systems for controlling operations.



Quick acting, straight and full bore with flexible seats that tighten their seal as the fluid pressure increases. Spindle leakage is prevented by a flexible diaphragm which unites the fixed body and movable spindle.




## . . . . and here is a model with NYLON coated plug

which permits higher working pressure (up to 250 p.s.i. on small models) and at the same time reduces torque and consequent seat wear. Nylon coated plugs are standard on 2½in. and 3in. valves and optional on all other sizes.

SAUNDERS VALVE COMPANY LIMITED

DIAPHRAGM VALVE DIVISION

CWMBRAN · NEWPORT · MONMOUTHSHIRE

# CURRENT PRICES OF IRON AND STEEL

*(Delivered, unless otherwise stated)*
December 31, 1959

## PIG-IRON

**Foundry and Forge Iron.**—No. 3 iron, Class 2, Middlesbrough, £21 6s.; Birmingham, £20 18s. 3d., 10-ton lots or over.

**Low-phosphorus Iron.**—Over 0·10% to 0·40% P, 10-ton lots or over, £23 5s., delivered Birmingham, £23 10s., delivered Grangemouth.

**Basic Pig-iron.**—Delivered in Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leics, 10-ton lots or over, £20 3s.

**Hematite.**—Si up to 2%, S & P 0·03-0·05%; N.-E. (local iron), £24 14s.; Scotland (Scotch iron), Zone S.1, £25 0s. 6d.; Sheffield, £26 2s. 6d.; Birmingham, £26 9s.; Wales (Welsh iron), £24 14s., 10-ton lots or over in each case.

**Refined.**—Cylinder and refined irons, South Zone £25 9s., North Zone £25 6s. 6d. Refined malleable, max. 0·10% P, South Zone £26 9s., North Zone £26 6s. 6d.

## MANUFACTURED IRON

*(Bar basis, 2½ in. to ¾ in.)*

CROWN IRON: England and Wales (Zone 1), £48 10s.; Scotland, £48 5s.; Ireland, f.o.q. Belfast, £50 7s. 6d.; all other Northern Ireland ports, £50 10s., f.o.q. Cable iron, £1 extra.

## SEMI-FINISHED STEEL

**Re-rolling Billets, Blooms, and Slabs.**—BASIC: Soft, u.t., 100 tons and over, £31 15s. 6d.; tested, 0·08-0·33% C, 6 to 35 tons, £33 15s. 6d.; hard (0·41-0·60% C), under 10 tons, £34 17s.; silico-manganese, under 10 tons, £43 16s. 6d.; free-cutting steel up to 0·25% C, under 10 tons, £36 14s. 6d. SIEMENS-MARTIN ACID (under 10 tons): Up to 0·25% C, £41 1s.; silico-manganese, £44 4s.

**Billets, Blooms, and Slabs for Forging and Stamping.**—Lots of under 10 tons. Basic, soft, up to 0·33% C, £38 10s.; basic, hard, over 0·41 up to 0·60% C, £39 12s. 6d.; acid, up to 0·25% C, £43 4s.; acid silico-manganese, £46 7s.

**Alloy Steel** (5 tons to under 10 tons).—BILLETS, 3 in., up to and including 10 in., for re-rolling, 0·6/1% Ni, £47 7s.; Ni 2·75/3·75%, Cr 0·5/1·10%, £74 5s.; Ni 2·75/3·75%, Cr 0·5/1·3%, Mo 0·2/0·65%, £84 14s. BARS: 1 in. dia. and up, nickel, £68 10s.; nickel-chrome £99 4s.; nickel-chrome-molybdenum, £111 17s.

**Other Semi-products, etc.**—Forging ingots, up to 0·60% C, £31 12s. 6d. f.o.t.; tube billets, under 10 tons, £40 10s.; shell steel billets for direct forging up to and including 0·33% C, 100 tons and over, £37 15s.; tin bars and sheet bars, 50 tons and over, £32 10s. Wire rods, 3g. to 4g. (all areas except Birmingham, Scotland, Southern Joint Area, and Northern Ireland): Soft basic, under 50 tons, £41 2s.; hard basic, under 10 tons, £44 8s.; free-cutting, up to 0·25% C, £46 12s.; acid, up to 0·75% C, £54 14s. 6d. Stainless steel billets, 3 in. and over, 5 tons to under 10 tons, Austenitic, £229 10s.; martensitic, £141 10s.

## FINISHED STEEL

**Heavy Products** (1 ton to under 10 tons).—Mild-steel plates, ordinary qualities, N.-E. Coast and Northern Joint Areas and Central Scotland, £42 2s.; medium plates, all areas of England and Wales, £45 11s. 6d.; boiler plates, N.-E. Coast and Northern Joint Areas and Central Scotland, £44 12s.; floor plates, N.-E. Coast, £43 11s. Sections (N.-E. Coast, Midland, and Northern Joint Areas, and Central Scotland): Angles, £39 16s. 6d.; bars (rounds and squares), £42 6s. 6d.; flats, £40 1s. 6d.; joists, £39 12s. 6d.

**Rolled and Re-rolled Steel Products.**—N.-E. Coast, Midland, Northern Joint, and South Wales Areas, and Central Scotland, 50 tons and over: Angles and tees, 4 un. in. and under, £40 18s. Channels, 3-in. web and under, £40 18s. Flats, 5 in. wide and under, and rounds and squares, under 3 in.: Untested soft basic, £39 1s.; free-cutting, £45 1s. 6d.; hard basic, £41 19s. 6d.; Siemens-Martin acid, £45 0s. 6d.; spring steel, basic, £44 4s. 6d.; spring steel, acid, £52 19s. Glazing tees, £47 0s. 6d. Sash and casement sections, £43 13s. 6d. Gate channels, £50 17s. 6d. Ferro-concrete bars (10 tons to under 500 tons), £39 10s.

**Sheets and Strip.**—Uncoated strip mill coils, hot rolled, under 3 mm. to 12g., mill run, mill edge, 25 tons to under 50 tons, £43 16s.; cold reduced, 17/20g., side trimmed, skin passed, £49 16s. Black sheets, 24g., 10 tons and over, £57 14s. 6d.; galvanized corrugated sheets, 24g., 10 tons and over, £68 5s. Cold-rolled steel strip, coils, hard temper, not annealed, 10 tons to under 20 tons, £55 15s. Hot-rolled hoop and strip, u/t soft basic, 100 tons and over, £38.

**Tinplates.**—Cold reduced, hot dipped, 15 tons to under 50 tons, 67s. 4½d. per basis box of 108 lb., f.o.t. makers' works. Cold reduced electrolytic, 60s. 10½d. per basis box.

**Colliery Rails and Arches.**—Arches, 4 in. × 2½ in. × 2 in., re-rolled £39 15s., 3 in. × 3 in., re-rolled £40, 3½ in. × 3½ in., re-rolled £40 7s. 6d., 4 in. × 2½ in. × 2 in., prime £44 6s. 9d. Other sections, prime £44 11s. 9d. Extra fishplates, £52 10s. Cambered girders, 4 in. × 2½ in. × 2 in., re-rolled £38 9s., 3 in. × 3 in., re-rolled £38 11s. 6d., 3½ in. × 3½ in., re-rolled £38 18s. 6d., 4 in. × 2½ in. × 2 in., prime £43 4s. Other sections, prime £43 6s. 6d. Benk bars, standard type, prime material, all thicknesses, £38 11s.; re-rolled, up to ¾ in., inclusive, £37 6s.; over ¾ in., £38 11s. "W" type bars, prime steel, all thicknesses, £41 1s.; re-rolled, up to ¾ in., inclusive, £39 16s.; over ¾ in., £41 1s.

**Bright Steel** (10 tons to under 20 tons).—Bars, no analysis or test, £52 8s. 6d.; flats, untested, £70 3s. 6d.

**High-speed Tool Steel.**—Finished bars, 5% cobalt, 10s. 10d.; 14% tungsten, 6s. 11d.; 18% tungsten, 7s. 9d.; 22% tungsten, 9s. 2d.; 4/6 quality molybdenum tungsten, 6s. 3d.; 6/6 quality molybdenum tungsten, 6s. 5d.; 5/6/2 quality molybdenum tungsten vanadium, 6s. 7d. per lb.

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| Heavy steel scrap* .. | 229 3 | 228 3 | 220 0 | 226 3 | 226 3 | 227 3 | 232 3 |
| Heavy mixed scrap* .. .. | 207 3 | 206 3 | 198 6 | 204 3 | 203 9 | 205 3 | 210 3 |
| Heavy steel turnings† .. .. | 179 9 | 179 9 | 169 9 | 176 9 | 174 3 | 177 0 | 180 0 |
| Heavy cast iron† | 206 9 | 203 9 | 208 0 | 204 3 | 189 3 | 199 3 | 205 9 |
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The Company offers assisted passages for successful applicant and his family and liberal leave conditions; pension and medical aid schemes. Married and single accommodation is available.

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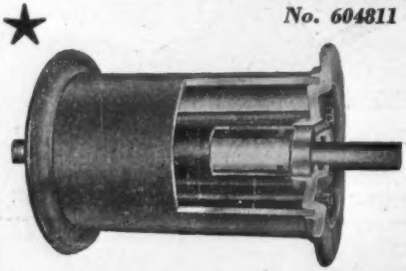

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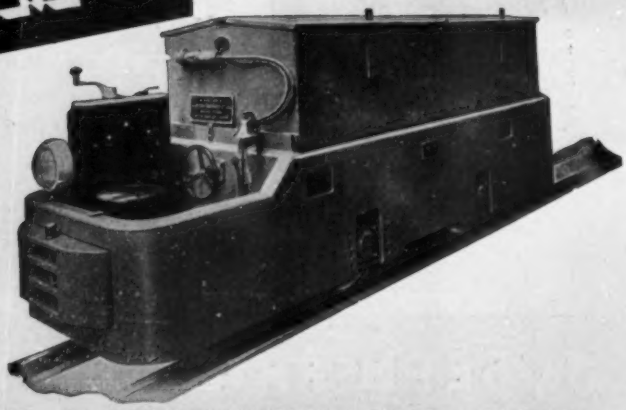

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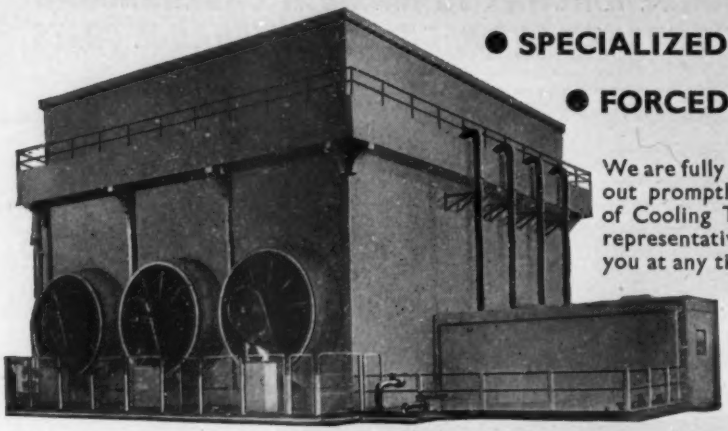

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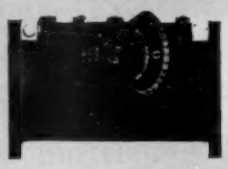

Fig. 1.

Fig. 2.

Fig. 3.

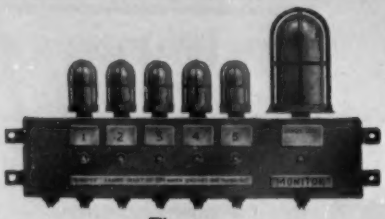


Fig. 4.

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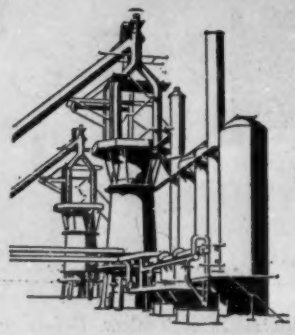

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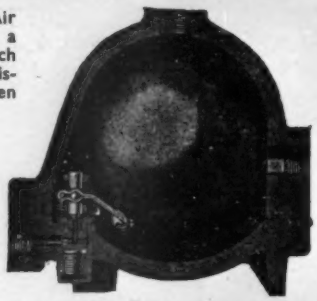

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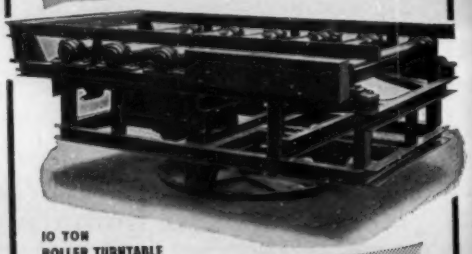

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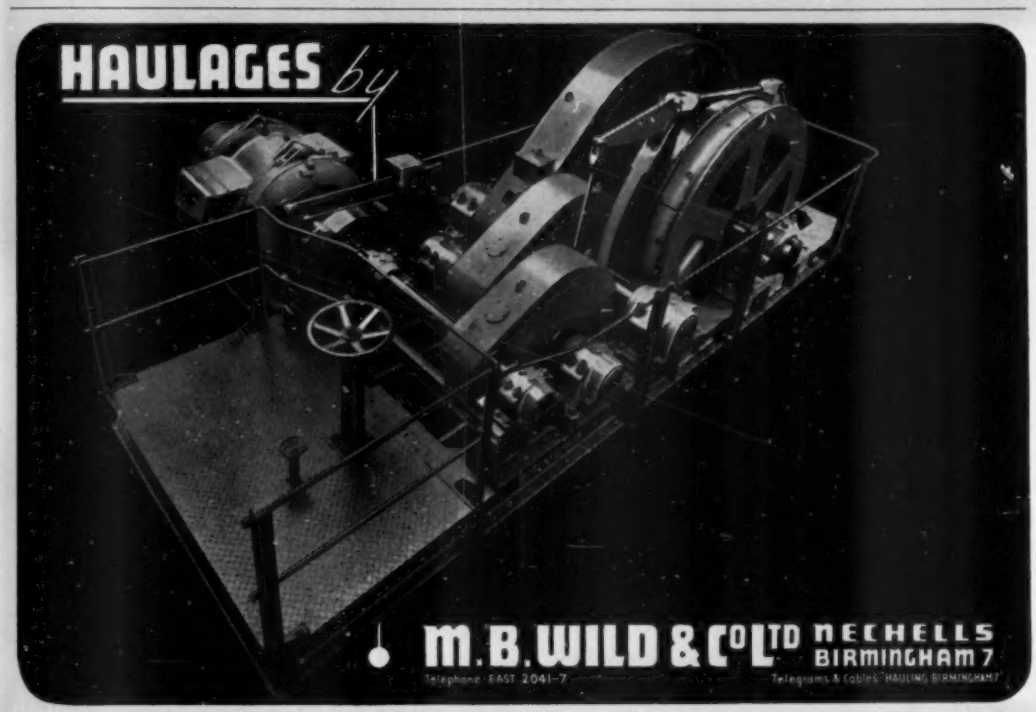

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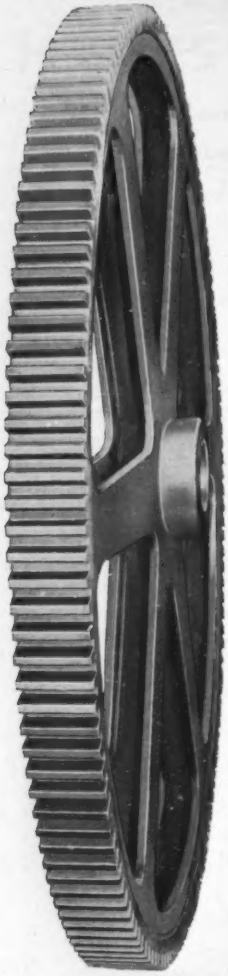

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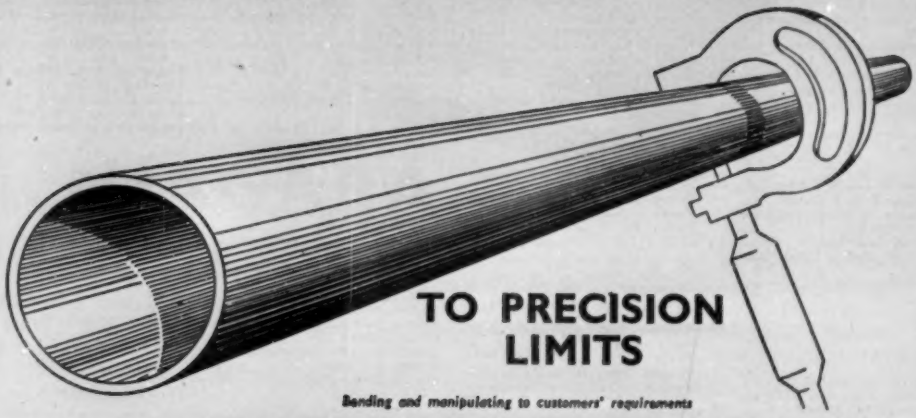

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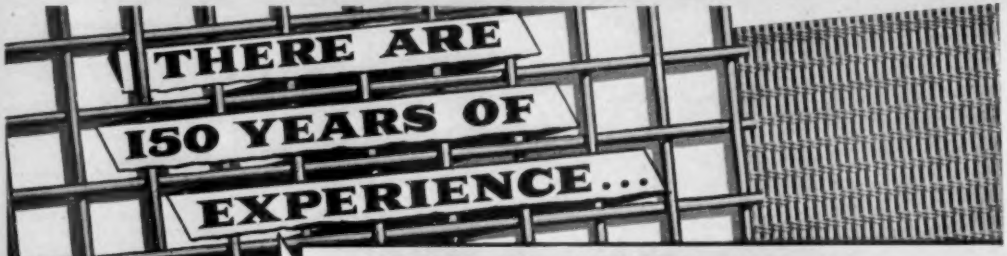


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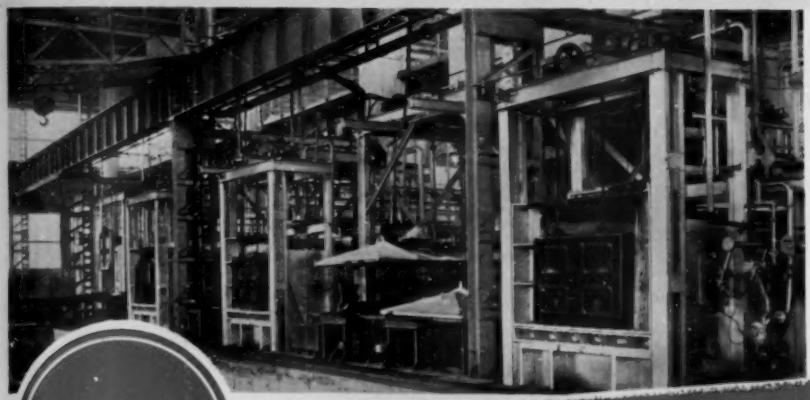

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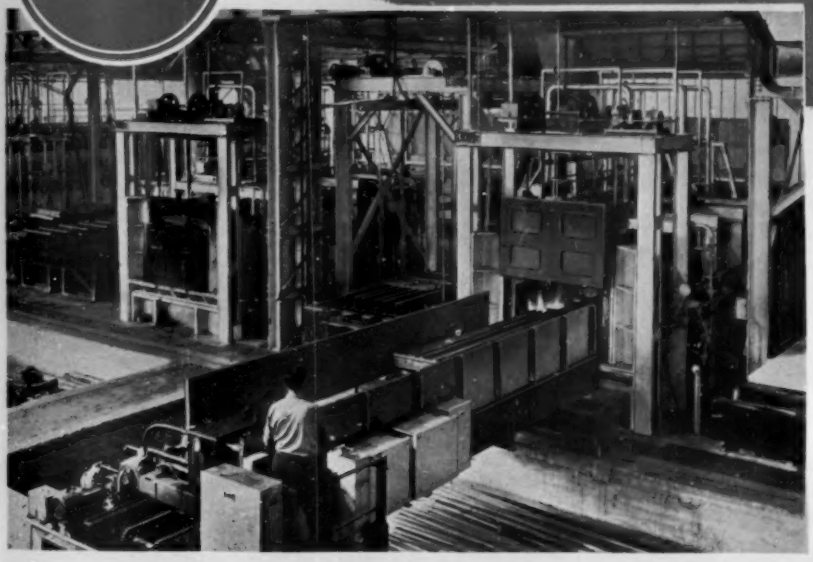

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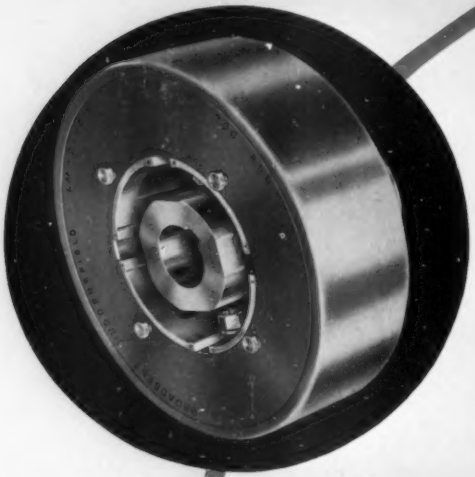

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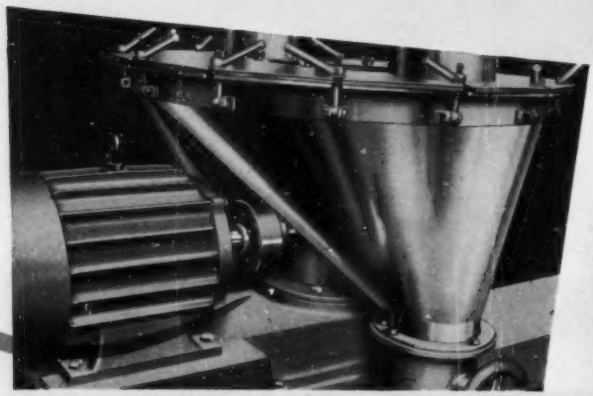

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